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ABSTRACT

Volume I of the First Annual Report of the National Day Care Study (NDCS) funded by the Office of Child Development presents an overview of the NDCS study, the background of federal involvement in day care, the day care policy issues being addressed, an overview of the study design and phases, uses and limits of study findings, and the results of Phase I--the development of the resource framework. The NDCS, being conducted over a 3-year period, is designed to answer major policy questions about federally subsidized day care centers and the children they serve. Appendices include information about site selection and data selection systems. (MS)

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FIRST ANNUAL REPORT

1974-1975

Volume I

An Overview of the Study

National Day Care Study

2

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National Day Care Study

FIRST ANNUAL REPORT
1974-1975

Volume I
An Overview of the Study

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ACKNOWLEDGEMENTS

The National Day Care Study (NDCS) is being conducted over a three year period by the Day Care Services Division, Office of Child Development (OCD) of the Office of Human Development (OHD), U.S. Department of Health, Education and Welfare (HEW). This first annual report is designed to acquaint the reader with the work of the NDCS from July 1974 to September 1975. Over the past several months the report has undergone a number of revisions as both reviewers and events contributed new perspectives and new information.

Especially important were the views, suggestions and editorial comments of members of the NDCS Advisory Group*: Sally Brown, Virginia Burke, Arthur Emlen, Robert Fein, Mary Howell, Teh-Wei Hu, Jim Levine, Richard Light, Christine Marston, Keith McClellan, Gwen Morgan, Jack Niemeyer, Daniel Ogilvie, Elizabeth Prescott, Mary Rowe, Richard Rowe, and Nancy Travis.

Allen Smith, the OCD government project officer, carefully critiqued each working draft and made substantial contributions. Three of his project consultants, Thomas Achenbach, Robert Brennan, and Victor Cicirelli, made detailed suggestions for revisions in the technical discussion of Volume 2: *Phase II Design*. In addition, Preston Bruce Jr., Director of OCD's Day Care Services Division, made helpful contributions to Volume I.

Finally, in-house review and helpful commentary were made by Richard Anderson and Morris Shepard in their official quality control function and by many of the 33-person staff of the NDCS in Cambridge and at the three study sites.

As with most study reports, this has been a joint effort. Volume I was coordinated by Richard Ruopp, the Foreword and Chapter I were written by him, and Chapter 2 was a joint effort with Craig Coelen. Chapters 3 and 4 are largely Steven Fosburg's work. Robert Goodrich contributed to Volume I, and Jean Layzer and Donna Warner provided editorial assistance. Robert Goodrich is the principal author of Volume 2 with contributions by Marvin Cline, Craig Coelen, and Steven Fosburg, and editorial assistance by Jean Layzer and Richard Ruopp.

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Abt Associates Inc.
Cambridge, Massachusetts
January, 1976

Background information on members of the National Advisory Committee, OCD Staff and Consultants and Project Staff will be found in Appendix C.

FOREWORD

THE DAY CARE CONTEXT 1975

There is a substantial demand in the United States for day care services.* Some thirty-five million children below the age of 14 are cared for at least one hour a week by someone other than their parents; over three million of these children are cared for by a non-relative for 30 hours or more each week.[1]

In response to this demand there are licensed day care facilities for about a million and one-half children. These facilities include family day care homes (1-6 children) and centers (7 or more children). Most child care arrangements, however, are provided informally in the child's home, at work, or with relatives and friends on both a paid and unpaid basis.

Licensed day care capacity is divided as follows:

- 30,000 centers for 1,200,000 children (81 percent of total capacity);
- 81,000 family day care homes for 284,000 children (19 percent of total capacity).[2]

The majority of children in centers and family day care homes are three-, four-, and five-year-old preschoolers. Of every six children in licensed care, four are three to six years of age, one is school age and one is younger than three.[3]

What are the "best" day care arrangements for children, especially for those whose parents are away for substantial periods of time? And what do the best arrangements cost?

These are unresolved questions in 1975, debated within and among the many constituencies which are concerned with day care. In an attempt to resolve them, some groups focus on the *quality* of care that children receive and lobby to maintain and raise the current standards. Others believe that there is an unmet need for day care and are anxious to expand the *quantity* of care available. They want to keep day care costs low so that more parents can afford to purchase reasonable care for their children, and to ensure that, where parents can't afford care, available public funds are used to serve many more children.

Still other groups are looking for the quality/quantity tradeoff, the exact line where the needs of the largest number of children can be met with programs that facilitate growth in critical areas of development. Such groups are not in favor of makeshift programs but rather seek to define the quality and cost level that provides the best service for the most children.

Over the past four decades, the federal government has increasingly taken an advocacy role in the development and welfare of children. Most recently, its actions as a large consumer and regulator of care for federally-subsidized children have exerted a powerful shaping force on both consumers and providers of day care. Because of this involvement in day care, the federal government has developed a strong interest in the quality/quantity tradeoff and the implications of this tradeoff for the costs of day care.

THE IMPETUS FOR THE NATIONAL DAY CARE STUDY

Over the past seven years the federal government has become the major institutional consumer of day care for children from six months to 14 years of age. During the 1975 fiscal year alone, close to one-half billion dollars were spent to purchase welfare-related day care for some 550,000 children from both centers and family day homes (35 to 40 percent of available licensed capacity).[4] In the six fiscal years 1970-75, federal, state and local government agencies expended an estimated total of $2.4 billion on the direct purchase of day care services. About $1.8 billion

It should be understood at the outset that data on national day care are scarce and often imprecise. Data reported here provide a reasonable view of the national day care picture. Data sources are identified in the Notes section at the end of the volume.

of this was dispensed by the United States Department of Health, Education and Welfare (HEW), as authorized by Title IV-A of the 1968 amendment to the Social Security Act (SSA)* which provides social service Aid to Families with Dependent Children (AFDC). The 50 states spent an additional $600 million to meet the 25 percent matching requirement, and were responsible for administering all funds.[5]

As a result of its role in day care, the federal government is concerned with the costs and effects on children of day care purchased as a service to welfare-eligible parents. This policy concern has been translated into a set of regulations which apply to those day care programs, homes and centers, which elect to serve one or more federally-subsidized children. Since 1968, the Federal Interagency Day Care Requirements (FIDCR) have set standards designed to regulate a wide variety of program characteristics presumed to control the quality of classroom process and thereby both protect children from harm and positively affect their growth and development. For example, the FIDCR specify the minimum number of caregivers that are to be available to each group of children, according to the age of the children. The FIDCR also mandate that at least one caregiver in each group be trained or have demonstrated ability in working with children. These staffing requirements clearly attempt to determine the quality of the day-to-day classroom experience and have important cost implications.*

The 1968 FIDCR, developed jointly by HEW, the Department of Labor (DOL) and the Office of Economic Opportunity (OEO), were based on expert judgment and the best available evidence. However, no carefully-designed, large-scale studies of day care were available to policy-makers at the time the FIDCR were developed. There were no data illuminating the relationships among day care classroom processes, child outcomes, program costs and the key FIDCR-regulated program characteristics: staff/child ratio, group size and staff professionalism.[6]

Title IV-A was replaced by the Title XX amendment to the SSA in early 1975.

THE NATIONAL DAY CARE STUDY (NDCS)

The National Day Care Study will assess the costs and the effects of both current and alternative federal day care policies. *The NDCS focuses on the costs and effects on federally-subsidized preschoolers of larger full-day, full-year urban day care center programs.* More specifically, the NDCS is being designed to answer the following major policy questions:

- How is the development of preschool children in federally-subsidized day care centers affected by variations in staff/child ratio, staff professionalism, group size and/or other regulatable center characteristics?
- How is the per child cost of center day care affected by variations in staff/child ratio, staff professionalism, group size and/or other regulatable center characteristics?
- How does the cost-effectiveness of federally-subsidized center-based day care change when adjustments are made in staff/child ratio, staff professionalism, group size and/or other regulatable center characteristics?

The Office of Child Development has funded two research organizations to assist the OCD Day Care Services Division in conducting the NDCS: Abt Associates Inc. (AAI) of Cambridge, Massachusetts and Stanford Research Institute (SRI) of Palo Alto, California. AAI has overall administrative and technical responsibility for the study, while SRI, as testing contractor, is responsible for selecting and implementing measures of day care classroom processes and children's development.

The study is divided into three phases. In Phase I (July 1974-September 1975), three research sites (Atlanta, Detroit, Seattle) and 64 day care centers were selected, study design

The specific requirements and their quality and cost implications are discussed in Chapter 2, THE POLICY CONTEXT.

and data systems were developed, and classroom-process and child development measures were field-tested. Phase II (September 1975-September 1976) is a study of the selected centers as they exist "naturally." The objective of this phase is to provide the information needed to construct a powerful Phase III experimental design. Phase III (September 1976-December 1977) will be a controlled experiment in 32 centers, in the course of which hypotheses generated in Phase II will be tested.

In December of 1977, the NDCS will complete work on the three major policy questions. At that time, it will present systematic findings to the government on the cost-effectiveness of the current FIDCR and the potential effects of alternative regulations on children, on costs and on the supply of center day care. Study findings will be contained in a series of public reports developed during 1976 and 1977. This report is the first public documentation of the study's background and design.

THE FIRST ANNUAL REPORT

The First Annual Report is published in three volumes. Volume I is available for general distribution. It presents an overview of the National Day Care Study: the background of federal involvement in day care, the day care policy issues being addressed, an overview of the study design and phases, uses and limits of study findings and the results of Phase I.

Volume II, which is available upon request, presents the research design for Phase II and includes a detailed technical discussion of the study's analytical and methodological issues.

Volume III is a compendium of the program, cost, and parent measurement instruments and systems designed by AAI for use during Phase II. The battery of instruments selected to measure classroom processes and child outcomes during Phase II is described by SRI in a separate report to be published in May, 1976.

Volume I is organized into four chapters and three appendices as follows:

Chapter 1: FEDERAL INVOLVEMENT IN DAY CARE traces the history of federal involvement in day care, provides a synopsis of the 1968 Federal Interagency Day Care Requirements and closes with a short discussion of some of the definition and measurement problems associated with the FIDCR.

Chapter 2: THE POLICY CONTEXT addresses the major policy issues that have given rise to the NDCS. It begins with a discussion of the basic policy research objectives and shows how these objectives have been translated into design decisions within the study. It shows how the study population was chosen to conform to the policy requirements and describes the study's data bases and their relation to the policy objectives. The chapter concludes with a description of those policy-relevant results which will be available before the end of the study.

Chapter 3: DESIGN OVERVIEW describes the major elements of the NDCS research design. It begins with the rationale for the study's three phases. It next proceeds to discuss in greater detail the components of each phase of the design: Phase I Startup and Early Design, Phase II Natural Study, and Phase III Controlled Experimental Study. Chapter 3 also describes the NDCS Supply Substudy. Added to the NDCS in July 1975, it is intended as a supplement to the major study. This substudy will collect and analyze data on a national random sample of 3,000 day care centers in all 50 states.

Chapter 4: USES AND LIMITS OF STUDY FINDINGS discusses the implications of the design decisions presented in Chapter 3. It explores both the strengths and the limitations of the design and shows how the study results can be generalized with a proper regard for design constraints. It points out implications of the sampling procedures and shows how the results of the Supply Substudy may

be integrated with the results of Phase II. Throughout, a series of methodological issues and constraints are addressed.

APPENDIX A: SITE AND CENTER SELECTION traces in detail the criteria, decision rules and procedures utilized in the selection of the three study sites and 64 study centers in Phase I.

APPENDIX B: DATA COLLECTION SYSTEMS describes each of the four data collection systems (program, cost, parent, site/center) developed in Phase I for use in Phase II. In addition, the specific classroom process and child outcome instruments being used by SRI are briefly described.

APPENDIX C: THE NDCS ADVISORY GROUP, CONSULTANTS AND STAFF lists the members of the various groups involved in advising, reviewing and conducting the National Day Care Study.

Chapter 1: FEDERAL INVOLVEMENT IN DAY CARE

The federal government's first significant involvement in day care began during the Depression. In 1933, Works Project Administration (WPA) funds were used for the first time to hire unemployed women (and some men) to serve in WPA-sponsored day nurseries. By 1937 there were 1,900 such programs serving some 40,000 children. The Federal initiative at this time was directed primarily to the provision of jobs for the unemployed.[1]

During World War II, the level of federal activity increased. In 1942, the Community Facilities (Lanham) Act was applied to child care centers. Its intent was "to provide for the acquisition and equipment of public works made necessary by the defense program." Day care was funded under the Act in order to free women to join the war's industrial effort. By 1945, some 50 million federal and state dollars had been channeled, primarily through school systems, into day care. In that year there were 1.5 million preschool and school-age children in facilities operated under Lanham Act funding.[2]

With the end of the war, the number of women in the labor force rapidly diminished. Since day care had been viewed as an employment-related service to women, the need for this service was no longer recognized. Federal involvement in day care waned, not to be resumed for more than 15 years.[3]

Beginning in the 1960s and continuing to the present, a dual view of day care has shaped federal involvement. On the one hand day care is seen as a *service to parents,* designed to free welfare recipients for training and/or employment, thereby reducing welfare support. This view is represented by the passage in 1962 of the child welfare amendment to the Social Security Act, which supported day care service to welfare parents. The second view stresses day care as a *service to children* and has focused on the quality of day care provided to the children of welfare recipients.

In this second view, day care provides an opportunity to assist children in overcoming the educational disadvantages which poverty is presumed to foster. The passage in 1964 of the Economic Opportunity Act, with its provision for full-day Head Start, set the stage for direct, developmentally-oriented, federally-supported day care as a service to children.

Two legislative events in 1967 radically increased federal involvement in serving both welfare parents and children. First, the enactment of the Title IV-A amendment to the Social Security Act, better known as AFDC (Aid to Families with Dependent Children), rapidly expanded the government presence in the day care world. The several billion IV-A dollars released for purchase of care since then have been provided to encourage and/or require welfare recipients to work or take part in work-related training. The assumption has been that the provision of publicly-funded day care will, in the long run, *reduce* the net cost of welfare by allowing welfare mothers/fathers to enter or reenter the labor force. Under this assumption, day care as a work-facilitating service to parents was considered a sufficient justification for the expenditure of public funds.

Secondly, amendments to the Economic Opportunity Act in 1967 led to the development of the 1968 Federal Interagency Day Care Requirements (FIDCR). Specifically, SEC. 522 (d) of the Act states:

> "The Director [of OEO] and the Secretary of Health, Education and Welfare shall then take all necessary steps to coordinate programs under their jurisdiction which provide day care, with a view to establishing, insofar as possible, a common set of program standards and regulations, and mechanisms for coordination at the state and local levels."

As a result, an interagency task force, including representatives from OEO, HEW and DOL, developed the FIDCR, which in early 1969 became part of the Code of Federal Regulations. The

FIDCR "set forth requirements which day care programs must meet if they are receiving [specified federal] funds . . ."[4] These requirements, oriented principally to the quality of the day care experience, were designed to produce positive effects on children.

Late in 1974, Congress passed a major piece of legislation which brought together under one law the funding of welfare-related day care as a service to parents *and* federal day care regulations designed to ensure the quality of day care as a service to children. SEC. 2002 (a) (9) (B) of *Title XX – Grants to States for Services* amendment to the Social Security Act, which supersedes and expands Title IV-A, sets forth the details:

> "(A) No payment may be made under this section with respect to any expenditure in connection with the provision of any child day care services unless – . . .
> (ii) in the case of care provided outside the child's home, the care meets the Federal Interagency Day Care Requirements as approved by the Department of Health, Education and Welfare and the Office of Economic Opportunity on September 23, 1968;"

Subparagraph (B) of the same section requires that the Secretary of HEW evaluate the "appropriateness" of the FIDCR as amended by Title XX.

> "(B) The Secretary shall submit to the President of the Senate and the Speaker of the House of Representatives, after December 31, 1976, and prior to July 1, 1977, an evaluation of the appropriateness of the requirements imposed by subparagraph (A), together with any recommendations he may have for modification of these requirements."

Every effort is being made by the National Day Care Study to assist HEW in preparing for the appropriateness report. Areas in which the National Day Care Study data base might potentially yield new insights into key policy issues (e.g., the appropriate definition and measurement of staff/child ratio) are being examined, and several have been identified for special study (See section on Phase II Policy Monographs in Chapter 3).

THE FIDCR: A BRIEF ANALYSIS

The provisions of the 1968 FIDCR were specifically selected in an attempt to guarantee that federally-subsidized children of welfare recipients would have a quality day care experience. The definition of quality was set in terms of specific classroom-level and center-level characteristics. Implicit in the Federal Interagency Day Care Requirements is the assumption that the characteristics of day care centers that produce quality care for children are known and are subject to regulation. Their intent has been to produce a safe and healthy learning environment.

They rest on the assumption that control of a number of classroom- and center-level characteristics will both protect children from harm and promote their positive development. These positive results are expected for all federally-subsidized children anywhere in the country, regardless of differences in family background, parental child-rearing practices, or the children's entering status.

The FIDCR, enacted in 1968, and slightly amended by Title XX, cover a number of program characteristics: staff/child ratio and size of group; suitability and safety of facilities; the provision of social, health, and nutritional services; staff training and parent involvement; as well as aspects of administrative coordination and program evaluation.

To understand the application of the FIDCR to day care centers, it is helpful, when comparing extremely diverse center-based programs, to think of day care centers as comprising two distinct levels of program operations. A day care center may be seen as having a *Core Program,* consisting of a standard core and a varying core, and a *Supplemental Services Program.*

The *standard core* covers the day-to-day delivery of essential services to the child in day

care. It is this component of day care which is found in all day care centers across the country. It consists of the center facility, the caregivers, meals, first aid, and the administrative structure that supports direct delivery of care. The standard core program always includes basic care of the child (protecting, "nurturing," feeding, etc.) and usually involves some minimum "educational" activity during part of the day as well.

The *varying core* includes some additional health and transportation services. These services may be provided (if they are provided at all) by the center or some other agency, depending on local circumstances.

The Supplemental Services Program comprises elements generally considered to benefit the child indirectly; they include such areas as family social services and staff training.

In addition to these program requirements, the FIDCR set external *administration/coordination/evaluation* requirements. These areas of the FIDCR have been abstracted and synthesized by program area from the Title XX-amended FIDCR in Table 1-1.

Table 1-1

The 1968 Federal Interagency Day Care Requirements for Centers as Amended by Title XX

1)(a) Core Program Requirements (Standard):

Staff/Child Ratio and Group Size

Age of Children	Maximum Number of Children per Staff Member*	Maximum Group Size
new born to 6 weeks	1	not specified
6 weeks to 3 years	4	not specified
3 to 4	5	15
4 to 6	7	20
6 to 10	15	25
10 to 14	20	25

The Facility

The facility must be licensed, meet safety and sanitation requirements and provide adequate space and equipment for free play, rest, privacy and indoor and outdoor activities.

Educational Program and Materials**

Daily educational opportunities, designed to motivate and promote self-concept, social, cognitive and communication skills, must be provided

(continued)

* Every group, regardless of age, must have one ". . . adult . . . directly responsible for supervising the daily program for the children . . . " Additional staff can include "assistant supplemented by volunteers to meet ratio requirements."

** Expanded education programs often appear within the varying core. Under Title XX this requirement has been made optional.

Table 1-1 (cont'd.)

	by those trained or with demonstrated ability under the supervision of a staff member trained or experienced in child growth and development. Centers must have age appropriate educational materials for development and creative expression.
Nutrition and Minimal Health Requirements	The center is to provide for adequate (quantity and quality) meals and snacks, daily health checks, and provision for emergency health care and periodic staff health assessments.
(b) Core Program Requirements (Varying)*	
Additional Health Requirements	The center is to provide for child health evaluations at enrollment and periodically, as needed, with health treatments and care provision through existing resources (or paid for by sponsor if not otherwise available). Immunizations must be made available.
2) Supplemental Services:	
Social Services	Direct and coordinated-referral social services must be provided under the supervision of a trained or experienced staff member with support of non-professionals. The center must also provide counseling and guidance about the appropriateness of day care for a child and a periodic assessment of child adjustment.
Staff Training	Pre-service and in-service training must be provided under assigned staff supervision/coordination or arranged for all staff in program goals, specific program areas and the relationship of the child to the community. Career ladder and mobility must be provided as well as specific training in child health/accident prevention.
Parent Involvement	Provisions should be made for parent observation/participation in the care of their own children and in center decision-making

(continued)

* Although not specified in the FIDCR, many centers also supply transportation as part of their varying core in response to parental needs where homes are quite distant from the center and/or public transportation is not available.

Table 1-1 (cont'd.)

	(specific requirements include a minimum 50%-parent policy advisory committee at an administering agency providing care for 40 or more children).
3) External Administration/Coordination/Evaluation	
Facilities Location	Regulations include eligibility priorities, ease of access, equality of access to center and other resources, neighborhood involvement and Title VI (Civil Rights Act) requirements.
Health	Regulations require the overall supervision of health provisions by a qualified physician and health records on all children and caregivers.
Parent Fees	Regulations specify sliding fee schedules for parents able to pay part or all of the cost.
Administration	Regulations require written personnel policies; equal employment opportunity with priority for welfare and low-income persons; staffing patterns congruent with those of Head Start; limitation on waivers in purchase-of-care arrangement; policies and procedures published for FIDCR-specified *program services, intake and eligibility, and financing,* community relations and information; self evaluation; state and federal reports, and Title VI compliance.
Coordination	Regulations require that local and state administering agencies must coordinate planning, avoid duplication and share resources between different types of programs.
Evaluation	Regulations require that centers must be periodically evaluated in terms of the FIDCR. Centers must evaluate themselves in a manner specified by administering agencies.

THE FIDCR AND COMPLIANCE ISSUES

There are certain obvious difficulties in monitoring compliance with the FIDCR. With the exception of the staff/child ratio, group size and Parent Advisory Committee requirements, the FIDCR are not clearly defined or measurable. They are written in such a way that only the presence or absence of a required event can be determined with certainty. For

example, although there is a requirement that asks whether periodic health evaluations have been undertaken, such questions as: "how often? what kind? how well? measured against which criteria?" cannot be answered by the FIDCR.

There are even difficulties with the apparently clear staff/child ratio requirements. Because staff/child ratios have been quantified as single numbers, they tend to give the impression of being stable and easy to define and measure. In fact, there are significant problems in selecting, defining, and monitoring a particular ratio. Because of enrollment, staffing, and absenteeism patterns, staff/child ratios vary as a function of time of day, day of the week, and month of the year. Furthermore, two caregivers with 10 three-year-olds is quite a different situation from one caregiver with 5 three-year-olds, even though the ratio is the same.

Specifying when and how ratios should be monitored becomes an important concern. A "snap-shot" approach is appealing because it can be done simply as an adult and child head count. However, early results of the NDCS show that this method can produce widely different results depending on *when* it is done. Another approach, used by AAI in its *Study in Child Care 1970-71*, keeps track of the actual attendance hours of both classroom staff and children. The division of staff hours by child hours produces a staff/child *contact hour* ratio, which some think a better measure of actual service delivered to children. However, far more record-keeping is required to construct the contact-hour ratio. One of the important outcomes of the NDCS will be an empirical description of staff/child ratios, how they vary over time, and how they can best be defined and measured.

Given the problems with definition and measurement, and the administrative rather than legislative status of FIDCR until last year, it is little wonder that the 10/74 Senate *Child Care Data and Materials* point to the absence of monitoring and, most probably, compliance. "Testimony has indicated . . . that there is little monitoring to see whether requirements are being met." (page 23)

Given the lack of an empirical basis for the 1968 FIDCR, inflation in general and, more specifically, the increased cost implications of higher staff/child ratios, it is not surprising that the debates over quantity, quality and cost trade-offs became more heated after the passage of Title XX in January of 1975.

The Title XX-amended FIDCR were to have taken effect on October 1, 1975. However, an unusual level of controversy arose when HEW issued a supplementary regulation stipulating a staff/child ratio of one to two for children under three years of age. On September 26, 1975, a Louisiana federal district judge responded to a suit against the FIDCR ratios by private operators in five southern states and blocked the October 1 implementation date. Congress, sensitive to the controversy over the new infant ratio requirement, the anticipated increased rigor in monitoring and enforcement of the existing staff/child ratio for older children, and the lack of provision for increased funding, delayed the full implementation of the FIDCR until February 1, 1976.[5]

Chapter 2: THE POLICY CONTEXT

The primary objective of the NDCS is to provide day care cost-effectiveness information to the federal government. Findings of the NDCS are intended to play a major role in both the review of and decisions about current regulation and funding practices that affect those day care centers serving federally-subsidized preschool children.*

POLICY RESEARCH OBJECTIVES

It is clear that *government* – federal, state and local – has a major stake in the results of the debate over day care policy. While Congress and the Executive will ultimately decide the federal role in day care, the Department of Health, Education and Welfare (HEW) will continue to play a key role in shaping national policy. HEW's Office of Child Development, as initiator of federal regulations, and its Office of Social and Rehabilitative Services, as funding source and controller of the disbursement mechanism, will provide data on the "appropriateness" of federal day care regulations.

Central to the debate over government involvement in day care has been, is, and probably will continue to be issues of quality and cost. Questions concerning the appropriateness of government subsidization of day care, the need for government regulation of providers, the best locus of regulatory authority, and the most efficient mechanism for subsidization are all important policy issues, but they are not central concerns. In the foreseeable future, government subsidies and government regulations are likely to be retained in one form or another.

The issue of which level of government should have regulatory authority is currently receiving considerable attention. To the extent that this is a political and philosophical issue it is not amenable to resolution through empirical research. A part of the controversy that currently surrounds the delegation of regulatory authority to the states is the question of whether the more stringent federal staff/child regulations or the more lenient state regulations are most cost-effective.

State and local governments obviously have a vital interest in the whole range of day care issues. However, some take advantage of every federal dollar available to support day care in their state while others de-emphasize day care in favor of other social service programs. Questions concerning staff/child ratios, caregivers' professionalism, group size, eligibility requirements, monitoring of regulations, and program administration all impinge on the cost of day care and, therefore, on the magnitude of social service and administrative budgets.

The National Day Care Study, with its emphasis on the cost-effectiveness of alternative types of center-based day care arrangements, is clearly focused on the principal issues of the current discussion of government day care policy. This discussion centers on the cost and efficacy of government regulation of day care programs and staff.

The basic mandate of the National Day Care Study is to examine the impact of variations in the regulatable characteristics of federally-subsidized center-based day care on the cost and quality of the care received by preschool children. The purpose of the following subsection is to elaborate on the meaning of "the impact of regulatable characteristics on the cost and quality of care."

The Three Policy Variables

The FIDCR control many center characteristics such as staff/child ratio, professionalism of the staff, size of child groupings, nutrition,

*The justification for focusing on center-based day care, as opposed to other forms of care, and for limiting the population to preschoolers, rather than including infants and school-age children, is presented below in POLICY CONSIDERATIONS AND DESIGN DECISIONS, beginning on page

health care, in-service training, parent involvement and properties of the physical plant. Many other characteristics, if regulated, could potentially promote children's development; equipment and educational materials, age mix of children, director professionalism and staffing patterns are prominent choices.

While the NDCS will examine each of these characteristics, three have been selected for primary study: staff/child ratio, group (class) size and caregiver professionalism. (For a more detailed discussion, see Chapter 3.)

The NDCS is carefully distinguishing between policy variables and background variables. Policy variables such as staff/child ratio, professionalism, group size and properties of the physical plant are subject to direct government control. The background variables such as age and sex of the child, family characteristics and the socio-economic characteristics of the community can be influenced by the government only indirectly or not at all. Both types of variables explain some part of the child outcomes of day care programs. The focus of the study is on the relationship among policy variables, classroom process, child outcomes and day care costs. At this stage of the study the following definitions are being used for each of the major policy variables. Further refinement of these definitions will be an important result of the study.

- *Staff/child ratio:* the number of children assigned to each classroom caregiver. In measuring this ratio, time of day, day of the week, month of the year, staff and child attendance patterns, absences, the number of caregivers and variations in activities are being measured.
- *Group size:* the total number of children assigned to a class and/or a principally responsible caregiver. Again, such factors as time of day, staff and child attendance patterns and variations in activities are relevant.
- *Professionalism:* the total years and type of formal education and child-related training and experience of classroom caregivers. Such background characteristics as personality and educational philosophy are not being directly assessed since they are clearly not policy-controllable. Definition of professional competency measured behaviorally and its relationship to education and experience will be a study finding.

These variables have generally been regarded as critically associated in some direct way with quality and cost. Taken together they determine the nature and the number of contacts between caregiver and child, and between children on a day-to-day basis within the day care center. It has been widely assumed that, within limits, a higher staff/child ratio lowers the risk of damage and increases the opportunity for successful stimulation of the child's development – cognitive, psychological and social. Part of this assumption also holds that an upper limit on group size is required both for safety and for the creation of a properly supportive environment for growth. Finally, it has been thought that a well-trained, experienced caregiver will, through classroom processes, produce positive outcomes for children. Therefore, these classroom and center characteristics were prominently specified in the FIDCR.

In 1968 it was not well known that the three policy variables, especially staff/child ratio, are major contributors to differences in the per-child cost from one center to the next. Principally as a result of the AAI *Study in Child Care 1970-71* and the Westinghouse/Westat *Day Care Survey of 1970,* the cost sensitivity of these variables became fully known. Differences in staff/child ratios and caregivers' wage rates account for most of the variations in personnel costs across centers with similar enrollments. In addition, personnel costs generally represent 65 to 80 percent of day care centers' budgets. As a result, much of the observed variations in costs per child

can be explained in terms of differences in staffing ratios and wage rates.

The NDCS Policy Questions

The first of three major policy questions the NDCS will address concerns the *quality of day care* provided in federally-subsidized programs and the relationship between quality and program characteristics. This question is:

> How is the development of preschool children in federally-subsidized day care centers affected by variations in staff/child ratios, staff professionalism, group size and other regulatable center characteristics?

The definition of the "quality of care" has been debated, often heatedly, since the early 1960's and is still unresolved. Some have held that quality can be ensured by selecting the right *ingredients:* the right staff/child ratio and group size, the right kind of trained and experienced teachers, adequate facilities, equipment and materials. This is the assumption behind the FIDCR. Some have focused on classroom and center *process*, contending that unless there are warm, stimulating and challenging interactions, the test of quality is not met. Others have insisted that only measured results -- achievement of specified *outcomes* by day care children -- can determine the level of quality. Still others combine two or all three of these factors in their definitions of quality.

Quality can be viewed as a continuum, with damage at one end of the scale and maximum child development at the other. Agreement is easily reached at the damage end. The following conditions would be marked low or unacceptable on anyone's day care quality scale: cramped space, no outdoor play area, lack of emergency exits, exposed wiring, inadequate heating, no books or toys, physical abuse, continued hostile and negative teacher actions, no evidence of three-year-old children developing in their ability to care for themselves, or no growth in a four-year-old's verbal skills over a six-month period.

Defining quality is more problematic at the developmental end of the scale. What are the necessary components of quality day care: teachers with advanced degrees? carefully structured exploratory experiences? daily cooperative play? evidence of substantial cognitive gain? forceful self-confidence? rudimentary reading and writing? personal independence? advanced motor coordination? good manners? obedience? public school readiness? cultural awareness? In our pluralistic society, what would be the criterion for a high-quality developmental day care program to some would be unacceptable to others. No total or even partial national agreement is likely to be reached on this issue.

The National Day Care Study has specifically avoided an *a priori* definition of quality. Careful measurements are being taken of the entire range of program ingredients, of numerous aspects of classroom interactions among children and between children and caregivers, and of children's achievements in a broad range of outcome categories (various areas of school-readiness, social and emotional development, and others). These measures will be used to develop alternative definitions of program quality and to test the relationships between program quality and the major policy variables -- staff/child ratio, caregivers' education and experience, and group size. This approach will permit a very thorough and generalized test of the FIDCR's assumption that the regulation of key program and staff characteristics is an effective regulation of program quality.

The second of the three basic questions the NDCS will address concerns the *cost of day care:*

> How is the per-child cost of center-based day care affected by variations in staff/child ratio, caregiver professionalism, group size and other regulatable center characteristics?

The cost of day care programs has been studied in the past, but the results of earlier research

relate to specialized types of programs or pertain to specific geographical areas; they are of limited usefulness in 1975-77 because of the extraordinary increases in costs which have occurred in the last several years.

While the impact of variations in staff/child ratio, group size and professionalism on quality is not precisely known, differences in staff/child ratios and caregiver wages *do* have a powerful and well-understood impact on costs in day care centers. The tradeoff between ratio and staff salary, given a fixed budget, dramatically illustrates this impact.

Consider the following example. A non-profit center with an enrollment of 50 children (30 four-year-olds and 20 three-year-olds) charges parents $33/week for five nine-hour days of care. It is operating at the FIDCR staff/child ratios (for this center an average of 1:6), although it has no federally-subsidized children. From its annual budget of $82,500, this center pays classroom staff an average of $2.57/hour ($5,140 annually) and the director $3.50/hour ($7,000 annually) plus 10 percent fringes (actual average national urban day care center wages in early 1975).[1] The center is able to provide one snack and a hot lunch daily and spends $20 a year per child on classroom materials. The center's annual budget is very tight. The center has no volunteers and no other sources of income. It cannot tolerate bad debts, provides no scholarships, and gives no reduction in fee for multiple children from one family. It slightly over-enrolls to avoid loss of income because of excessive absenteeism or gaps in enrollment.

Assume the center board discovers that it can no longer attract or hold the kind of director or caregivers it wants for its children without raising salaries. By changing ratios to 1:8 overall, the center could pay its director $10,000/year and raise caregivers to $3.21/hour ($6,420 annually). A ratio of 1:10 in this center would allow the board to pay its director $12,000 annually and raise teachers to $3.75/hour ($7,500 annually), an almost 50 percent increase, and still have more than $1,000 left for some other purpose.[2]

Obviously centers may pay the cost of higher ratios by reducing staff salaries. High ratios are presumed to be beneficial to children; on the other hand, higher wages may attract staff with more professional credentials. The objective of the NDCS is to address these issues empirically: *Are* higher ratios beneficial to children? *Are* more professional staff attracted by higher wages? *Are* more professional staff beneficial to children?

In our example, parents were paying $33 per week (73 cents an hour) for care. This comes to more than $1,500 a year for one child, allowing for vacations and holidays. It is clear that only families earning a good income can afford this much. In fact, fees of $20 to $25 per week are standard charges for care by many parent-fee-only centers. At this rate, and paying the current wages, the ratio would have to be over 1:12 to cover costs.[3] For FIDCR centers, actual costs range from $40 to $50 per child-week depending on staff salaries and the scope of supplementary services offered (e.g., transportation, health services, staff training). Since many states set reimbursement rates for federally-subsidized children at $25-30 per week, many centers experience difficulty in providing the FIDCR-required program.

Clearly day care costs, and therefore the day care world, are affected by seemingly small variations in ratio and staff wages. Complex trade-offs must be examined carefully by national and state policymakers whose decisions have had and will continue to have impact upon large numbers of centers, their staffs, and the much larger child population in need of care.

In addition to documenting carefully the per-child cost of day care in the centers participating in the NDCS, the study will generalize

the cost findings to the rest of the country and will identify mechanisms which can be used to update cost estimates. The primary cost-related function of NDCS, however, is the development of a financial model of center day care which can be used to identify the variations in per-child cost which would result from variations in the regulatable characteristics of center facilities, programs and staff.

The third basic study question addresses the potential *quality/cost* trade-offs that may be associated with alternative formulations of the FIDCR.

> How does the cost-effectiveness of federally-subsidized center-based day care change when adjustments are made in staff/child ratios, staff professionalism, group size and other regulatable center characteristics?

In some areas of policy concern the research findings of the NDCS may identify a set of alternative regulations in which a single preferred choice clearly dominates all others. Consider, for example, a set of hypothetical findings that: (1) the welfare and development of children in day care centers is not in any way improved by the use of caregivers with post-high school educations; and (2) centers have to pay a salary premium to hire college-trained classroom staff. If such findings did emerge and could be well documented, the policy implications would be clear: future day care regulations should not mandate professional standards for caregivers which require post-high school education, nor should the government pay higher fees for publicly-subsidized children in centers whose classroom staff are college-trained than in centers whose caregivers have only high school educations.

More often than not research findings will not lead to such clear-cut policy decisions. It is more often the case that policy-makers have to make choices – mandate higher program quality requiring larger day care appropriations or cut costs per child and serve more children at the expense of some quality in each child's day care experience. The objective of the NDCS research is to characterize the choices that exist for those who set regulations and appropriate funds. For each set of regulatory alternatives the study will identify those aspects of program quality which are at stake and determine how large variations along a given quality dimension are likely to be. HEW and the Congress will have to balance the potential variations in program quality against the expected changes in program cost.

In addition to describing carefully the implications of alternative regulatory policies for the welfare and development of children and for the cost of federally-subsidized care, the NDCS can evaluate the impact of alternative policies on the center-based portion of the day care provider universe. The NDCS Supply Substudy of the national supply of day care centers will provide a state-by-state profile of the existing availability and characteristics of center-based care. The data collected by this substudy can be used to generalize the cost-effectiveness findings to geographical areas which are not included in the main 64-center study (see the last section in Chapter 4, **GENERALIZATION PROCEDURES**). The data can also be used to forecast the impact of alternative regulations on the availability of center care, the composition of center-based care (e.g., the distribution of capacity between public and private, profit and non-profit centers), the salaries paid in centers, the fees charged to parents, the enrollment of children paid for by parent fees, the availability of special services in alternative types of centers, and the income and expenditure structure of centers.

POLICY CONSIDERATIONS AND DESIGN DECISIONS

The choice of the policy variables and the specification of the major policy questions established a decision framework for the NDCS that was used to define the study population, to select the site and center sample and to develop the elements of the data base.

Selecting the Study Population

The selection of an appropriate study population was the first step towards answering the three central study questions. This population was selected from the potential study universe to meet the requirements directed by policy considerations, in a way consonant with accepted experimental design practices. From this population the NDCS will develop, during Phase II and Phase III, an extensive data base to provide answers not only to our central policy questions but many other questions important both to government decision-makers and other day care constituencies. (See **POLICY USES OF INTERMEDIATE FINDINGS**, the next section.)

The potential study population is enormous. As indicated in the Foreword, there are currently some 35 million children under the age of 14 in day care for some part of the week in a wide range of settings: paid and unpaid, licensed and unlicensed. They are cared for in their own homes, in the homes of others, and in day care centers. Children in day care range from the newborn to 12-year-olds (and even older). Children are cared for both part-day and full-day, from one to six days each week and from ten to twelve months of the year, depending upon family circumstances.

The set of limitations imposed on the population to be studied derives in large measure from the primary aim of the NDCS: to analyze the effects and costs of the FIDCR of *federally-subsidized children*. Licensed care or its equivalent is a precondition for federal subsidy through a provider; therefore unpaid, unlicensed care was excluded from consideration.

Even after this exclusion the potential study universe is quite large. Federal dollars are used by states to purchase care in family day homes, in small and large centers, in urban and rural settings, for infants, toddlers, preschoolers, and school-age children, both part- and full-day, for non-English-speaking children and for children with special needs.

The universe needed additional focusing in order to ensure policy relevance and to achieve a well-balanced, tight experimental design within available resources. The following additional criteria were used in the selection of the type of day care programs to be studied:

- *Licensed day care centers:* Centers were chosen over family day care homes because they supply 80 percent of licensed slots in the United States and perhaps an even higher proportion of federally-subsidized care.[4]
- *At least one year old:* Stability of centers during the study is critically important. The criterion of one year's operation helps to ensure stability and also avoids the start-up problems of new centers.
- *Located in urban areas:* Urban sites were chosen because an estimated 40 percent of all licensed centers are in the largest 50 cities and more than 90 percent of these centers are in urbanized areas.[5] Center-based day care in the U.S. is essentially urban day care.
- *Currently serving or eligible to serve federally-subsidized children:* Both centers providing some level of IV-A or other publicly-funded care and those dependent on fees were selected. This choice not only provided the necessary variability in staff/child ratio, but at the same time allowed more representative variations in income, family background, and center cost structures.
- *Enrollment of 25 or more children:* Larger centers were selected because they provide care for three-quarters of all children in centers.[6] In addition, they meet the practical requirements of a sufficient number of target children in each center to make observation and testing feasible. It was expected that the child population of day care centers would be quite unstable. As parents move, lose a job, or change working hours, their children move in and out of centers.

Study centers were selected only if they had enrollments of 25 or more children to guarantee that, even with the expected high attrition rate (from 30 to 50 percent) during Phase II, a sufficient number of target children would remain.

- *Providing year-round full-day care:* The year-round, full-day center requirement meets the federal policy intent to free parents for training and work. Furthermore, in order to assess the effects of day care centers, children had to be in the study centers for a sufficient length of time both in hours per day and in months. It is unreasonable to expect to measure any significant effects over a short period, except perhaps in the child's initial adaptation to the day care environment. Clearly, the home environment will be such a major influence that only substantial exposure to day care is likely to be measurable. To produce an adequate pool of full time, preschool children, centers were considered for the study only if they operated at least nine months a year, at least five days a week, and at least seven hours a day.

- *Serving full-day three- and four-year olds:* Almost two-thirds of the children enrolled in center-based day care are preschoolers between the ages of three and five.[7] Because five-year-old children attend kindergarten in many states and are therefore not enrolled in centers full-day for nine months or more, they were excluded from the study population. Three- and four-year-olds comprise 40 to 50 percent of the day care population, with four-year-olds alone representing about 25 percent.[8] In many states infant/toddler care is not offered on a center basis. In addition, measurement on a large scale of outcomes for children under three is virtually impossible because of lack of sound instruments.

- *Serving principally English-speaking children:* The English-speaking criterion is necessary because adequate instruments to measure outcomes for non-English-speaking children in the target age group do not exist. The 1970 Westinghouse/Westat survey indicated that probably the non-English-speaking group was no greater than eight percent.[9]

The selection decisions listed above focused the NDCS on that sector of the day care provider community currently serving the largest number of federally-subsidized children and on those children receiving the largest proportion of federal funds. Answering the central study questions for those providers and children first can have the widest impact.

The Study's Sample

One of the questions central to the early decisions on the study's design was whether or not the effects of day care on children vary substantially from one geographical area (site) to another. That is, does the same type of center, with comparable staffing and enrollment, produce significantly different results if located in one part of the country rather than another? Since the FIDCR were designed to be applied uniformly to all states, this is a critical policy question. In order to be able to estimate such a site effect, an adequate number of centers was needed in each of several sites.

Centers were to be selected in each site so that low and middle income groups, as well as white and black children, were all adequately represented. Obtaining an "overlap" in child, family and center characteristics was crucial to the study's design since the impact of day care on similar children in similar centers but in different geographical areas must be examined to identify the presence or absence of site effects. If staff/child ratios and other policy variables have different influences on children from one site to the next, then a search for the causes of site effects will be necessary, and the measurement and explanation of these effects will become a major focus of Phase II and Phase III of the NDCS. Without a carefully-specified research design, site effects might

become inextricably confused with the influence of such policy variables as staff/child ratio or staff professionalism. Such confusion would make it impossible for the study to identify the independent effects of these policy variables on children.

Three sites, carefully selected in different parts of the country, and 64 centers, systematically chosen for wide variations of staff/child ratio, professionalism and group size, will permit a careful statistical analysis of the impact of the policy variables on the quality of the day care experiences of children from a broad range of socio-economic backgrounds. (A discussion of the design is contained in Chapter 3.) To extend further existing knowledge of center day care and to allow more powerful inferences to be made to other states and to the nation as a whole, a telephone survey of 3,000 randomly-selected, licensed day care centers with 13 or more children will be conducted beginning in April 1976. Data from this national survey can be used to determine the degree to which the characteristics of the 64 study centers are replicated nationwide.

The Study's Data Base

The research design of the NDCS, to be consistent with the policy objectives of the study, requires that information be collected from several sources.*

- Parents
- Classrooms
- Centers
- Cities and States

Parent Information: The NDCS is collecting, through confidential parent interviews, information on family composition, family income, parents' occupations, parents' education, and other family characteristics. Specific data on children include age, sex, family status and previous day care experience. This background information will be used to make certain that changes in children that are the result of influences outside the center are not erroneously attributed to the day care center experience.

Parents are also being surveyed to determine why they are using day care and what they expect their day care arrangement to do for them and their children.

Classroom-Level Information: Data collected at the classroom level will provide the most important source of information to answer the main study questions. These data can also be used to answer many other questions, both of policy concern and of specific interest to non-government constituencies. There are three kinds of information needed at the classroom level: *basic classroom characteristics, classroom process* and *child outcome.*

Information on a number of *basic classroom characteristics* is being collected on a continuous basis in each of the 64 participating centers.

- *Child Characteristics:* the number, age, sex, schedule, absentee rate and turnover.
- *Staff Characteristics:* the number, schedule, training and experience, absentee rate and turnover of all paid and volunteer adults.
- *Program Characteristics:* the daily schedule and content of classroom activities.
- *Physical Characteristics:* the quantity of space and the kind, quantity and availability of consumable supplies, books, toys, games, blocks and other permanent child-centered equipment.

Using these data, the NDCS will be able to construct empirical definitions of staff/child ratio, group size, professionalism, and other independent, potentially regulatable variables.

The second kind of information needed from the classroom will be drawn from systematic

*For a more detailed discussion of the data collection instruments used by the NDCS, see Appendix B.

observations of interactions among children and between children and caregivers. This *classroom process* data will help define a center's "program" as it actually happens for children and teachers. These data can be used to address such important questions as: In what way do different staff/child ratios influence what happens in the classroom? How much time do caregivers spend interacting with children and how much time monitoring children's interactions with each other? How are different kinds of formal education and work experience translated into teaching and caring behaviors of classroom staff?

The third kind of information needed from the classroom level is *child outcomes.* While parents will supply background information on each full-time three- and four-year-old in the study, children themselves will be observed and tested to measure their growth in the areas of personal and social competency and school readiness. All measures to be used in the study have been shown to be sound indicators of preschoolers' cognitive, social and emotional development. These data will be analyzed and combined to arrive at alternative empirical definitions of each of the basic dimensions of the quality of day care for children.

The National Day Care Study is fully aware of the limitations and potential bias introduced if cognitive tests alone are used to define child outcomes. While all parents are concerned with intellectual growth of their children, many other personal and social skills – independence, self-control, cooperativeness – are of equal or greater concern for preschool children. The NDCS will be one of the few national studies to collect, administer and analyze such a comprehensive set of measures of the welfare and development of children through direct child observations and testing, assessment of children by teachers, and several systematic procedures for measuring appropriate social behaviors in children.

Center-Level Information: As with classroom-level information, data collected at the center level will be used to answer the central study questions. These data will be particularly important in illuminating differences across centers. Two kinds of center-level information are being collected; the first, related to basic organizational operating and staffing patterns characteristic of the center, includes:

- *Organizational Characteristics:* legal organization (profit/non-profit), auspices (private/public, independent/sponsored), years in operation, decision-making structure.
- *Operating Characteristics:* licensed capacity by age of child, enrollment, daily hours of operation, yearly days of operation, center goals and philosophy, scope of program (core, supplementary).
- *Staffing Characteristics:* staff structure, current staffing, director training and experience, personnel policies, wage structure, staff meeting and training patterns.

The second and most important set of center-level data relates to the income and expenditure patterns of the center and characteristics of its financial administration. The exact nature of the relationship between policy and cost can only be determined if a full cost picture is developed that includes both cash costs and the value of donated goods and services. All the expenditure and income data necessary to capture the full value of services delivered by study centers are being collected. Building on the results of earlier studies, cost data are being gathered in the following categories:

Standard Core Program

Child Care and Teaching
Administration
Feeding
Rent and Maintenance

Variable Core Services

Health
Transportation

Supplementary Services

Social Services
Staff Training
Parent Activities
Others

(See **THE FIDCR: A BRIEF ANALYSIS** in Chapter 1.)

These cost data will form the basis for descriptive studies of the income and expenditure patterns of different centers, and analytic studies of the determinants of salary structures and of the variations in costs per child that are associated with variations in policy variables.

City and State Information: The NDCS will make use of U.S. census data on neighborhoods in which study centers are located. In addition, descriptive information is being collected from other government sources about city characteristics, unemployment rates and migration. At the state level, it will be important to document changes that take place in day care licensing, Title XX day care plans, eligibility requirements, reimbursement mechanisms, and overall day care funding levels. While much of the city and state information will be general in nature, it will provide a vital picture of the socio-economic influences which affect center staff and families.

The major task of the NDCS is to analyze the data outlined above to answer the study's three central policy questions by the end of 1977. The specific techniques and procedures to be used are fully discussed in Volume 2, *Phase II Design.*

POLICY USES OF INTERMEDIATE FINDINGS

Scientifically-validated answers to the study's central policy questions cannot be provided until the end of Phase III. Only then will enough empirical evidence be at hand about the basic policy variables. During that phase experimental manipulations and control of variables not related to the study's central policy questions will allow a definitive test of the influence of the policy variables on child outcomes. However, many policy applications of descriptive data can be developed during Phase II. The National Day Care Study can be responsive to the needs of government policymakers for information with regard to the type of data provided and the timeliness of the study's research results. Before the end of the NDCS many of the data sources outlined above can be used to answer partially or completely a broad range of subsidiary policy questions.

The *parent data base,* for example, can be used prior to the end of the study to answer such questions as: What, if any, are the differences in the characteristics of families receiving direct day care subsidies and those paying for their children's care themselves? What expectations do parents bring to the day care experience for their children and themselves? How satisfied are parents with their current day care arrangements?

Another set of critical and policy-relevant questions can be answered prior to the end of Phase III from the *classroom-level data base.* What are the major alternative definitions of staff/child ratio? For each alternative definition, how and when should staffing ratios be measured in the center environment? How stable are the various measures over the course of a typical day and over the course of a year? What range of classroom processes are observed from class to class and center to center under the same ratio conditions? The answers to these questions and a similar set for professionalism, group size, group composition and classroom activities *can be used to address the adequacy and clarity of the definitions used in current federal day care regulations.*

With the *financial data base* a range of critical cost-related questions can be answered: How do costs vary when staff/child ratios and other classroom variables change? What are the costs associated with the delivery of

services which are supplementary to the core day care program? Since cost data can be collected in a more straightforward fashion than information on the welfare and development of children, comprehensive research findings on the relationship between day care costs and the regulatable characteristics of centers -- one of the three policy issues upon which the NDCS is focused -- will be available prior to the end of the Phase III year.

Data from the *Supply Substudy* and the *city/state data base* can be used to identify types of impact associated with the implementation of Title XX on the center-based portion of the industry. The *Supply Substudy* will also be used, prior to the end of Phase III, to address the impact of variations in day care regulations and funding policies across states on the availability, composition and program characteristics of the supply of center-based care. (For a discussion of the Supply Substudy see the last section of Chapter 4.)

Because unanticipated changes may result from pending legislation, and because of the volatile nature of current debates, it clearly is not possible to anticipate the specific policy questions that will need to be addressed before the study meets its principal objective. A number have been identified and will be addressed in a series of policy monographs (short papers dealing with specific issues and the policy implications of NDCS findings on those issues). Four of these monographs are briefly described in the next chapter.

Chapter 3: DESIGN OVERVIEW

This chapter provides an overview of the study effort. It begins with a brief synopsis of and rationale for each of the study's three phases, followed by an analytic discussion of each of the phases. Special attention is paid to the research design developed in Phase I and currently in use during Phase II. The chapter ends with a discussion of the Supply Substudy, added to the NDCS in July, 1975.

SYNOPSIS OF AND RATIONALE FOR THE THREE-PHASE DESIGN

Phase I, from July, 1974 to September, 1975, was a period of planning and implementation. The design of the experiment was refined and the task of implementation in the field was undertaken: experimental sites were selected; sponsoring agencies were identified; day care centers were selected in each site for study in Phase II; data collection systems for program information, financial data and parent attitudes were developed and tested. Under a separate contract, SRI selected and field-tested both classroom observation and child outcome instruments.

In a number of previous child care investigations, many problems that emerged were attributed to ineffective implementation of the research design. The data collection systems used to capture information about center programs and classroom processes were often inadequate to handle the demands placed upon them. In the current study, Phase I and Phase II are concentrating on the development and validation of such systems in an attempt to prevent those same problems. This effort will serve to strengthen the integrity of the research and the significance and understanding of the results. Furthermore, the need to utilize better measures of children's development in order to assess the impact of center program characteristics and classroom processes has long been recognized.

Phase II, from September 1975 to September 1976, is a study of 64 centers selected from all the eligible day care centers in Atlanta, Detroit and Seattle. This phase may best be viewed as an exploratory version of the Phase III study. Many of the same data collection instruments will be used in both phases, with Phase II serving to refine and improve the quality of those instruments. Phase II is designed to develop hypotheses regarding the study's key policy variables by examining centers in a "natural" state, with minimal intrusion by the study, whereas Phase III will test these hypotheses in a "controlled" state.

Prior to the NDCS there was little information available on the full range and combinations of day care center program variables. Center programs vary with regard to auspices, caregiver/child ratio, administrator/child ratio, levels of caregiver experience and education, staff training, background of administrators, overall educational goals, level of services (food, health, social), ethnic mix, fee structures, staff turnover, equipment and materials, and so on. Centers also vary with regard to classroom (or group) processes that children are exposed to – that is, prevailing psychological climate, interaction patterns, social structures, caregiver behavior and types of activity.

Equally significant is the lack of substantial research depicting relationships between program and process dimensions. Previous attempts to relate input variables directly to child outcome measures without examining intervening classroom processes have resulted in disappointment and frustration. As a consequence, it has been impossible in the past to build sound links to child outcome behaviors and development.

These prevailing unknowns would normally represent a major limitation to the effective design of a controlled experiment studying day care costs and effects. It would limit the study's ability, for example, to identify and define appropriate representative levels of the independent variables to be measured and to utilize centers which reflect a range of other potentially significant program variables.

The rationale behind the Phase II experiment, therefore, is to provide this necessary information before a controlled experiment such as that proposed for Phase III is launched. In addition, Phase II will serve to determine meaningful levels of staff/child ratio and caregiver professionalism, identify other day care program characteristics that might be treated as independent variables or might require control in Phase III in order to assess the time effects of the independent variables, select centers which are willing to participate in the controlled experiment, and provide baseline data on classroom process and some child measures in these centers.

Furthermore, the inclusion of an additional year prior to the experimental phase will allow more time to field test and perfect classroom process and child outcome measures; identify and correct flaws in the data information and cost accounting systems; assess the readiness to proceed with Phase III; select Phase III sites; select and assign Phase III target centers within each selected site to treatment units; and complete the final design of the Phase III controlled experiment, including the identification of target group children.

Phase III, from September 1976 to December 1977, will be a controlled experiment based on the results of Phase II. The experiment will be conducted in 32 centers chosen at the end of Phase II and will be built around the research design components selected and developed in Phase II. Program, process and outcome relationships will be examined on the basis of planned experimental variation of the independent program variables.

The major goal of this phase is to answer the three major policy questions primarily on the basis of data developed during the Phase III controlled experiment. The study is structured so that the major components of day care costs – staff/child ratio and caregiver professionalism – will serve as primary independent variables in Phase III with the choice of other independent variables subject to the results of Phase II. During this phase the study will develop evidence to support specific program-cost levels in day care centers.

These results would not be attainable without the preceding two phases. The number of potential variables was so large that a premature attempt to set up a controlled experiment would surely have led to ambiguous study findings.

ANALYTICAL DISCUSSION OF THE THREE PHASES

Half of the three-year National Day Care Study has been completed. The remainder of this chapter presents a discussion of the three phases of the study, describing what has been done to date and what remains to be done. Phase I will be discussed in historical terms since it has already been completed. Half of Phase II is also complete and the remainder has been set so firmly in motion that all of the major elements can be described in detail. Phase III cannot yet be described extensively, since its final design depends upon the results of Phase II. (A detailed, supplemental account of the major activity of Phase I, site and center selection, is provided in Appendix A.)

Phase I

Each task of Phase I may be understood by its relation to the Phase II experiment. The first task (July – December, 1974) was the development of a research framework which, when implemented, would yield during Phase II the necessary data to design Phase III. Preliminary Phase I work was thus essentially the design of Phase II and is described below in the subsections entitled *Research Design Considerations* and *Selecting a Sample Size.*

Subsequent Phase I work (January – June 1975) was to lay the foundation for implementing the research design in the field, in preparation for Phase II. This task is described in the section *Site and Center Selection.* Finally, it was essential during Phase I to develop the data collection instruments for use

in Phase II (July 1974 – June 1975). These instruments underwent field testing in Phase I, but the real honing of the instruments is now underway in Phase II. The description of these instruments will be found in Appendix C.

Research Design Considerations

As the National Day Care Study began, there was little data on which to base a controlled experiment. It was not possible at that time to develop an experimental design which called for a selected set of levels for all of the variables of concern. Aside from staff/child ratio, professionalism and group size, it was not even clear what other variables might be meaningful candidates for control.

Instead of a controlled experiment it was decided that only a "natural" experiment would be feasible during Phase II. Only naturally-existing centers would be selected, and no center would be changed in order to meet the requirements of some theoretical model. "Control" would be exercised only through careful selection of the participating centers. The object of the "natural" study was to develop the information on which a sound controlled experiment could be based by determining which of the policy variables had the largest potential impact on children and what levels of these variables would be appropriate for a controlled experiment.

The design of the "natural" study focuses on staff/child ratio, professionalism and group size. It was determined that the most effective approach for assessing the impact of these variables on children would be to choose centers equally divided between High (H) and Low (L) values of these variables. Thus, some day care centers were selected for the study with low amounts of staff time available to each child (low ratio – LR) and some with higher amounts (high ratio – HR). Similarly, some centers were selected in which the classroom staff had less formal education (low professionalism – LP) and some with more formal education (high professionalism – HP). Finally, centers were divided between those with fewer children in each classroom group (low group size – LG) and those with more children (high group size – HG).*

A simple example will serve to illustrate how Phase II design considerations led to site and center sample selection decisions in Phase I. Assume for the moment that there are only two policy-relevant variables, staff/child ratio and professionalism, designated R and P, and that only four centers can be included in the study. One possibility is to choose two centers with relatively low levels of professionalism and staff/child ratio and two centers with high levels of these variables. This design may be illustrated as follows:

Center 1	Center 2	Center 3	Center 4
LP LR	LP LR	HP HR	HP HR

If it happens that children in Centers 3 and 4 do better in any way than children in Centers 1 and 2, it will be impossible to decide if the reason for this difference lies in the increase in professionalism, the increase in ratio, or both. This is a poor design because it cannot help disentangle the consequences of the policy variables.

A more efficient design would be as follows:

Center 1	Center 2	Center 3	Center 4
LP LR	LP HR	HP LR	HP HR

In this case, *all possible combinations of the variables are represented* in the four centers. (Center 1 is chosen to have low professionalism and low staff/child ratio. Center 2 has low professionalism and high staff/child ratio, and so on.) To assess the effect of professionalism, results in centers with a low level of

*Note that two centers with a "high" level of a given variable, for example, professionalism, did not necessarily have the **same** level of professionalism. "High" means only that the level of professionalism at that center is above the average.*

professionalism (1 and 2) are subtracted from those with a high level (3 and 4):

(Center 3 + Center 4) – (Center 1 + Center 2)

Note that if this difference is large, it must be because professionalism makes a difference and not because of differences in ratio. The only difference between the two pairs of centers is that one pair has high professionalism and the other paid has low professionalism. In both pairs, one center has high ratio and the other low, so ratio cannot make a difference overall.

In a similar fashion, the effect of ratio can be estimated by looking at the following difference:

(Center 2 + Center 4) – (Center 1 + Center 3)

In this case professionalism will not make a difference.

Of course the actual problem is more complex. First, there is one additional variable, group size, designated as G. If each of the three policy variables is to be assessed in the presence of the others, all combinations of the three variables must be available. To do this, eight centers are needed in the following arrangement:

Center 1	Center 2	Center 3	Center 4
LP LR LG	LP LR HG	LP HR LG	LP HR HG
Center 5	**Center 6**	**Center 7**	**Center 8**
HP LR LG	HP LR HG	HP HR LG	HP HR HG

To assess the effect of professionalism, the following differences in results must be examined:

(Center 5 + Center 6 + Center 7 + Center 8) –
(Center 1 + Center 2 + Center 3 + Center 4)

This difference is due to professionalism and not ratio or group size. Ratio and group size can be examined in the same way. (Note that if four variables are to be assessed, sixteen centers are needed for the basic design; if five variables, then thirty-two centers, and so forth. Early surveys showed that these multi-variable designs were not practical.)

Selecting a Sample Size

The grouping of eight centers shown above is the basic unit of the Phase II design. Known in statistical terminology as a block, this grouping contains one representative of each of the eight center types. The overall research design calls for several blocks, that is, several centers of each center type, in order to assess the variability of results from one center to another. For example, in a given center, the skill of the staff may far outweigh any deficiencies in the center structure so that a low staff/child ratio may still yield quite good results. Averaging over many centers allows a stable pattern to emerge.

Originally, the Office of Child Development suggested that the complete design include 60 centers divided equally among three sites. Subsequent analyses verified that three sites were indeed adequate to carry out the design, but using the block structure described above meant that 60 centers would not be ideal (a multiple of eight was required). The final choice was for 64 centers divided into eight blocks. Two sites were to contain two blocks (16 centers) each and the third site was to contain four blocks (32 centers).

Site and Center Selection

The decision to select 64 centers in three sites was based on statistical considerations. The eight-block design was found to be the best way to meet the policy objectives of the study; that is, to make visible the effects of staff/child ratio, professionalism and group size. The next step was to implement the design. The actual cities that were to be the study sites had not yet been chosen, but they would have to offer a sufficient range of day care centers for ultimate selection of either 16 centers in two blocks or 32 centers in four.

As indicated earlier, centers were to be chosen on the basis of a wide range of values of the

major policy variables to be examined. As indicated in Chapter 2, the study population was carefully defined to include only licensed centers over one year old; with capacities of 25 or more; providing year-round care to at least 20 full-day three- and four-year olds; currently serving or eligible to serve publicly-funded children; and having predominantly English-speaking children. (See Appendix A for additional criteria.)

It was estimated that any eligible site must have a minimum of 100 study-eligible centers if study staff were to obtain at least 16 cooperative research agreements with individual study centers. (Recall that two of the study sties were to have 16 study centers each; the third, 32 centers.) Licensing lists were obtained from all cities estimated to have the required number of study-eligible centers.

A telephone survey was conducted in 17 cities that were considered potential sites (seven of these cities were in the south, five in the midwest and the east, and five in the west) to determine the number of eligible centers at each site and to calculate the distribution of centers by high and low values of staff/child ratio, professionalism, and group size (plus several other candidates for independent variables including auspices and funding sources). On the basis of an analysis of telephone survey data, Atlanta was recommended as the large, 32-center site and Detroit and Seattle as the two 16-center sites. The Office of Child Development approved these recommendations.

Centers within these sites were selected through an elaborate procedure designed to match willing centers with study requirements. Luncheons were held to acquaint prospective centers with the study and in the end, very few of the centers chosen by the study refused to cooperate. Those few that did refuse were replaced by centers with nearly identical properties. Table 3-1 displays summary data describing the 64 centers now participating in the National Day Care Study.

Phase II

The primary purpose of Phase II is to prepare the strongest possible groundwork for policy-relevant findings in Phase III. This is not to say the Phase II conclusions will not themselves be policy-relevant; some of them will be. But the major thrust will be to design Phase III to answer the major policy questions. The "natural" study of Phase II is a very powerful tool for this purpose. By studying the natural operation of day care centers, we can clarify the measurement definition of major policy variables such as staff/child ratio and caregiver professionalism and generate a set of hypotheses for Phase III testing to answer the major policy questions about the relationships between these variables and child outcomes.

Although the study centers for Phase II were selected to represent a wide range of day care conditions, it was not feasible to obtain an appropriate range of values for every possible variable. In some cases variables will be almost completely linked in the study centers so that it will not be possible to determine which of the variables might contribute to an observed effect. For example, staff turnover could not be considered in the Phase II design. If turnover significantly affects child outcomes, the Phase II experiment should indicate this, but will not be conclusive. It will be difficult to disentangle the effects of staff turnover from the effects of the major policy variables. *It is unlikely that any particular child outcome can unequivocally be attributed to the major variables without further testing in Phase III.*

Already, the "natural" experiment has shown that the major variables themselves are not fixed and immutable in a given day care center; rather, they change over the course of the year. This mutability of the major variables points out the necessity for Phase II. It shows that any simplistic attempt to control staff/child ratio would not succeed because

Table 3–1
64 SELECTED CENTERS-SUMMARY DATA*

	ATLANTA	DETROIT	SEATTLE	TOTAL
A. Center Level Distribution	n=32	n=16	n=16	n=64
1. Some Welfare Families	20(63%)	15(100%)	14(88%)	50(78%)
2. Funding				
Public Only	18(56%)	0(0%)	3(18%)	21(33%)
Public/Parent Fee	8(25%)	16(100%)	11(69%)	35(55%)
Parent Fee Only	6(19%)	0(0%)	2(13%)	8(12%)
3. Auspices				
Non-Profit - Public				
School	9(28%)	0(0%)	0(0%)	9(14%)
Head Start	0(0%)	0(0%)	3(19%)	3(5%)
State/Local	0(0%)	0(0%)	0(0%)	0(0%)
Non-Profit - Private				
Independent	3(9%)	3(19%)	0(0%)	6(9%)
Voluntary Agency	8(25%)	2(13%)	3(19%)	13(20%)
Church	6(19%)	5(31%)	7(44%)	18(28%)
Profit				
Independent	6(19%)	1(6%)	1(6%)	8(13%)
Corporation	0(0%)	5(31%)	2(13%)	7(11%)
4a. Race/Child				
90-100% Black	20(63%)	6(38%)	1(6%)	27(42%)
67- 89% Black	2(6%)	1(6%)	3(19%)	6(10%)
34- 66% Black	5(16%)	5(31%)	3(19%)	13(20%)
67- 89% White	1(3%)	0(0%)	3(19%)	4(6%)
90-100% White	4(13%)	4(25%)	6(38%)	14(22%)
No. Centers with both	20(63%)	12(75%)	15(94%)	47(73%)
4b. Race/Staff				
90-100% Black	18(56%)	6(38%)	0(0%)	24(38%)
67- 89% Black	3(9%)	2(13%)	4(25%)	9(14%)
34- 66% Black/White	3(9%)	0(0%)	5(62%)	8(13%)
67- 89% White	6(19%)	2(13%)	0(0%)	8(13%)
90-100% White	2(6%)	6(38%)	7(44%)	15(24%)
5. Size				
Total Enrollment	2,235	838	898	3,917
Average Enrollment	69.8	52.4	56.1	62
Distribution of Size				
20- 49	12(38%)	11(69%)	7(44%)	30(47%)
50- 74	6(19%)	1(6%)	5(31%)	12(19%)
75- 99	8(25%)	1(6%)	3(19%)	12(19%)
100-124	4(13%)	2(13%)	0(0%)	6(10%)
125-149	2(6%)	0(0%)	1(6%)	3(5%)
150-174	0(0%)	1(6%)	0(0%)	1(2%)
175+	0(0%)	0(0%)	0(0%)	0(0%)
Target Children				
Full-time 3 & 4 yr. olds	999	431	343	1,773
Target Children as				
% of all 3 & 4 yr. olds	89%	67%	62%	78%
Full-time 3 & 4 yr. old				
average	31.2	28.7	21.4	27.7
B. Classroom Level				
No. of 3 & 4 yr. groups				
Total	70	34	33	137
Average Groups Per Center	2.2	2.1	2.1	2.1
Distribution				
Centers with 1 Group	6(19%)	9(56%)	3(19%)	18(28%)
Centers with 2 Groups	18(56%)	3(19%)	10(63%)	31(48%)
Centers with 3 Groups	4(13%)	0(0%)	2(13%)	6(10%)
Centers with 4 Groups	4(13%)	1(6%)	1(6%)	6(10%)
Centers with 5 Groups	0(0)	2(13%)	0(0)	2(3%)
Centers with 6 Groups	0(0)	0(0)	0(0)	0(0%)
Centers with 7 Groups	0(0)	1(6%)	0(0)	1(2%)
C. Child Level (Target)				
Race				
Black	773(77%)	264(61%)	155(45%)	1,192(67%)
White	217(22%)	160(37%)	148(43%)	525(30%)
Other	9(1%)	7(2%)	40(11%)	56(3%)
Total	999(100%)	431(100%)	343(100%)	1,773(100%)

*Based on October 1975 data.

staff/child ratio varies both as a result of staff scheduling and turnover and child scheduling and turnover. Fixing staff/child ratio at some absolute level is not feasible on a day-to-day basis. However, given the information developed in Phase II, it will become possible to define ratio on an average basis over a longer period of time.

The "natural" experiment also affords the opportunity to develop and test extensive data collection systems in day care centers. These systems yield data bases that will be important sources of information about day care for years to come.

Classroom process measures are also being refined during Phase II. An extensive analysis of the classroom observations made during the first data collection effort has already been conducted and has pointed to certain flaws in the instruments. Revisions have already been formulated and will be included in the next data collection effort. The data collection systems in use now were designed during Phase I especially for this study, and Phase II is serving as an extensive laboratory for honing these new systems. Early results have already shown that some data are so unstable that they are not worth collecting, whereas other data must be collected in a different form or at different time intervals.

Phase II also affords the opportunity to explore (within Phase II limitations) an assumption implicit in the FIDCR – namely, that factors within centers are decisive in determining child outcomes. An alternate hypothesis is that sites make a difference and that "identical" centers in different sites would have different effects on the children served. If actual differences appear from site to site in Phase II, this issue, with its important policy implications (that uniform regulations produce different results in different parts of the country) will require further testing in Phase III.

In addition to results necessary for the design of Phase III, Phase II will also yield findings of interest to a wide audience. The most definitive of these results will be in the area of day care costs. The costs associated with various levels of staff/child ratio, professionalism, and group size can be ascertained accurately. In addition, core and supplemental program costs will be detailed on a regionally-adjusted basis. From this, the cost support levels required to maintain the FIDCR and techniques for deriving them can be specified. (Cost findings, as opposed to child outcomes, can be generalized accurately because there is a large amount of national cost data from secondary sources.)

In addition, the degree to which the FIDCR are being followed "naturally" in policy-relevant centers will be reported in Phase II. This finding will cover not only the principal policy variables but also other FIDCR-specified inputs and will cast additional light on the effectiveness of the FIDCR implementation. It will therefore be possible to specify the process and the form by which the FIDCR are transmitted, monitored, and enforced at the local level, another important link in the translation of federal-level policy.

In short, the major tasks currently underway in Phase II are:

- *Variable Analysis:* The Phase II analysis will help to develop a list of variables that appear to be important in the day care setting. Staff/child ratio is one such variable. The study will produce an operational and quantitative definition for each variable (see below).

- *Development of a Quantitative Model:* This model will use statistical techniques such as regression analysis to analyze the major relationships among policy variables. The following questions will be addressed:

  – *Outcome measures:* What are accurate and meaningful measures of staff and child behaviors found in day care classrooms? To what extent should quality be defined as *outcomes of service to*

children? To what extent should they be defined as *outcomes of service to parents*? Should outcomes be measured in terms of damage or development? What are the significant components of damage and development? Should parent outcomes be measured in terms of satisfaction or participation? What outcome measures are acceptable to consumers, considered or proven valid by experts, and which ones can be reliably collected?

- *Staff/child ratio and group size:* What is the composition of preschool staff/child ratio in the natural day care center world? in classroom groupings of different sizes? How does staff/child ratio *vary over time* (daily, weekly, over the year)? How does it vary by center auspices? How do classroom process and child outcome vary with different staff/child ratios? with different methods for computing ratio?

- *Caregiver professionalism:* What is the composition of professionalism in the natural day care center world? How is professionalism defined in terms of formal education (quantity and type) and by experience (quantity and type)? How do classroom process and child outcome vary with different levels of professionalism?

- *Other center characteristics subject to regulation:* Are there other center characteristics which might be subject to licensing regulation? director qualifications? center auspices? group composition (age of children, number and type of staff)? supplementary services? physical plant structure? How do classroom process and child outcome vary with different levels of these characteristics?

- *Characteristics not subject to regulation:* Are there other factors outside policy control which might influence classroom process and child outcomes? child/family SES and race? family child-rearing practices? differences in sites? Can one set of uniform standards be applied with comparable effect across these factors?

- *Costs:* What costs are associated with different staff/child ratios? with different levels of caregiver professionalism? with variations in other center characteristics? How does cost vary by auspices? by mix of funding sources? by scope of program? by staffing patterns? by region of the country?

Phase II Policy Monographs

The Phase II research questions listed above need to be answered before a Phase III design can be fully articulated. It was originally intended that answers to these questions be reported in Phase III. However, the Title XX mandate for a FIDCR appropriateness report provides opportunities for the National Day Care Study to make timely and relevant responses. A series of four policy monographs will be prepared by the NDCS by the summer of 1976 addressing those policy issues accessible to meaningful analysis within the Phase II data base.

- Policy Monograph One – *Staff/Child Ratio and Group Size:* This monograph will set forth the problems inherent in the measurement of preschool staff/child ratios and group size in the natural study's day care center population. Several alternative definitions of ratio will be presented. The monograph will analyze the stability of each of these versions of ratio over time (daily, weekly, over the year) and study the extent to which ratios can be used to explain classroom processes. The implications of these findings for regulation, monitoring and enforcement will be discussed.

- Policy Monograph Two – *The Stability of Staffing and Enrollment:* This monograph will review the issue of staff professionalism. An index (or indices) of professionalism will be constructed based primarily on staff education and experience but also taking into account any further indications of professionalism as defined by classroom behaviors that may be developed during Phase II. Furthermore, this index will be related to the continuity of care across time as a function of both staff and child turnover rates. The relationship of turnover rates to classroom process will also be assessed. Again, the implications of findings for regulation, monitoring, and enforcement will be considered.

- Policy Monograph Three – *Variations in Center Programs:* Daily child activities, special

services to children, parent participation, field trips, staff meetings and in-service training are all areas covered by the FIDCR. This monograph will look at the presence or absence of these program elements across different types of centers, and will examine their relationship to each other and the major policy variables. The extent to which these elements affect classroom process will also be assessed.

- Policy Monograph Four — *Costs and the Policy Variables:* This monograph will examine the cost implications of the FIDCR. The related costs of different levels of staff/child ratio, professionalism and other critical contributors to cost in the 64 study centers will be examined. These data will be used to develop a cost model that can be analytically applied to all 50 states in developing reimbursement plan prototypes on an interim basis. The Supply Substudy results will be used to extend and refine this model.

Phase III

Phase III is in the planning stages and its precise form is dependent upon the results of Phase II. However, a general outline of Phase III is emerging. Whereas Phase II is a natural experiment, Phase III will be a controlled experiment; that is, certain resource additions will be made in some of our study centers in Phase III to achieve the most powerful research design. (Remember, no attempt was made to change centers in Phase II.) While the precise nature of the experimental manipulations has not been determined, a general principle has been established: *experimental manipulations will be selected only if they are likely to increase the level of quality at a center.*

Many types of manipulation are possible. For example:

- Centers could be given additional money to hire more staff in order to increase the staff/child ratio.
- Centers could be given additional money to pay people at higher salaries, thus allowing a center to raise standards of professionalism.
- Centers could be paid to keep their enrollment of children down. In this way they could attain a higher staff/child ratio with no change in staff.
- Center staff could be given additional intensive training to raise their level of professionalism.
- Centers could be given additional equipment and supplies.

Other manipulations are currently under consideration. By the end of Phase II, the present list of manipulations will be pared down to those few that are most promising. This final set of manipulations must be practical so they can be successfully implemented in the field, and they must satisfy the requirements of the research design by making it possible to isolate the effects on children of the major policy variables.

Phase III will begin with selection of 32 day care centers from the 64 currently participating in the Phase II experiment. The Phase III manipulations will be implemented in these centers in the fall of 1976.

THE SUPPLY SUBSTUDY

Between July 1975 and April 1976, Abt Associates Inc. will conduct a center Substudy for the NDCS. This study does not fit neatly into the phasing of the rest of the experiment in that it overlaps Phase II and Phase III. It is intended as a supplement to the major study, providing information that could be developed in no other way. This national study of day care centers will collect data on a random sample of 3,000 licensed day care centers. The sample will include approximately 7-10 percent of all eligible centers. These data will be used to develop state-by-state profiles of day care and will provide the basis for an econometric analysis of the impact of federal child care regulations and funding strategies on firms within the industry. Table 3-2 sets forth the components of the statistical profile the Supply Substudy will develop.

The statistical profile data will be analyzed to address the following policy questions:

- By state and for the nation, how are licensed centers and their enrollment and capacity distributed by each important determinant of the quality and/or cost of child care?
- How would the distribution of centers, enrollment and capacity change if the 1968 FIDCR, the 1972 FIDCR, Title XX regulations or any relevant alternate set of regulations were fully enforced in centers providing government-subsidized care?
- How would the enforcement of alternate sets of regulations affect the quantity, type and quality of privately-paid-for child care and the degree of socio-economic integration in licensed centers?
- What policies on vendor eligibility, reimbursement rates and payment mechanisms should be adopted in conjunction with FIDCR-type regulations controlling inputs to minimize market dislocation and other undesirable effects?
- What user-oriented forecasting models can be developed and what inexpensive additions can be made to ongoing efforts to improve the quality of state-level planning and policy-making with respect to licensed day care?

The Supply Substudy will also play an important role in the interpretation and generalization of the results of the major study. For example, it will allow the NDCS to obtain national estimates of the implications of cost and effectiveness findings. This role is discussed in some detail in the next chapter, "Uses and Limits of Study Findings." (Details of the Supply Substudy Design and Sampling Plan will be available in the spring of 1976.)

Table 3-2

Components of the Day Care Profile to be Developed by the Study

General Characteristics
- number of centers, licensed capacity and total enrollment
- number of staff and child-years of day care provided
- total revenue and government expenditures
- number of centers by type of organization
- number of centers by licensed capacity
- number of centers by ethnic composition of enrollment
- enrollment by type of organization
- enrollment by age of child
- full-time vs. part-time enrollment

Program Characteristics
- number of centers by years in operation
- number of centers requiring physical examination by enrollment
- number of centers providing health-related services by enrollment
- number of centers by number and type of meals served
- number of centers and licensed capacity by hours, days and months open
- number of centers by degree of parent participation

Staff Characteristics
- number of staff by age and ethnicity
- number of staff by status (full-time, volunteer, etc.)
- number of staff by education and previous experience
- number of staff by salary and education
- number of staff by salary and organization type of center
- number of centers and enrollment by average education and experience of staff
- number of centers and enrollment by current and required child/staff ratio

Financial Characteristics
- distribution of centers by organization type and source of income
- distribution of centers by percent of revenue from parents and welfare
- distribution of enrollment by percent of revenue from parents and welfare
- distribution of centers by organization type and size of average weekly fee
- distribution of centers and enrollment by organization type and cost per child

Characteristics of Users
- distribution of centers by organization type and average family income
- distribution of centers by average family income and family size
- distribution of centers by percent of mothers working
- distribution of centers by percent of families on welfare

Chapter 4: USES AND LIMITS OF THE NDCS FINDINGS

The inferences that can be drawn from the NDCS findings depend upon the basic research design* of the study and on the way in which that design was implemented.** While it will be legitimate to generalize some of these findings, the ability to generalize others will be circumscribed by the nature of the study. Two issues are involved:

- *NDCS Sample Composition:* What problems might arise as a result of the size, method of selection and ultimate composition of the study's sample? How will these potential problems be dealt with in the collection and analysis of data and in the interpretation of analytic results?

- *Generalization of NDCS Findings:* Will the results obtained for the sites, centers and children included in the NDCS sample be generalizable to other sites, centers and children? If so, how will these generalizations be made?

Both of these issues are discussed in detail below.

COMPOSITION OF THE NDCS SAMPLE

Both in Phase II and again in Phase III the choice of sites and centers is critical. They must be chosen so as to subject each hypothesis of the NDCS to as general and severe a test as possible within the limits of reasonable study cost. To accomplish this it was necessary to select a wide variety of sites and centers. This variety will make it possible to test each hypothesis under the widely varying conditions that currently constitute the day care center world. For an hypothesis to be supported it must hold true under the entire range of conditions available to the study.

The sites and centers selected for Phase II of the NDCS were chosen to maximize the power of the study to draw general inferences about the effects of major policy variables on day care costs and to make it possible to design a Phase III study to assess the influence of the major policy variables on child development. At the end of Phase II sites and centers will be selected for the Phase III experiment on the basis of the results of Phase II. The overall experimental design of the NDCS has been structured so that at the end of Phase III general inferences will be drawn about the cost-effectiveness of center-based day care.

The research design developed during Phase I was based on the widely-held hypotheses that staff/child ratio, professionalism and group size each have measurable impacts upon the development of children who receive a substantial amount of care from licensed day care centers. To test these hypotheses it was necessary to choose centers that differed on these variables. The assumption behind this choice was that larger center differences were more likely to lead to measurable effects. As discussed in Chapter 3 a choice of study centers was made so that both high and low values of all of these policy variables could be represented. Thus each hypothesis will be tested over the broad range of day care center types currently in operation.

If the major hypotheses are to be tested adequately, it is also important that the sample population of children within the selected day care centers represent a cross-section of children in day care. Take the hypothesis that staff/child ratio has measurable impact on child development. In order to test this hypothesis fully it is necessary to perform an experiment under a wide range of conditions to see if the hypothesis is correct and, if not, to determine under what conditions it is incorrect. It may well be that the impact of staff/child ratio depends on the demographic characteristics of the children tested. For some of these children the hypothesis may be

*The research design is discussed in Chapter 3.

**The implementation of the Phase II design is discussed in Appendix A.

true, for others false. If the sample of children were too narrowly defined it might well miss those children for whom the hypothesis is false and mistakenly conclude that the hypothesis is correct for all children.

Furthermore, federal day care policy impacts on a broad cross-section of children, and the NDCS should take as many of these children as possible into consideration. Federal policies affect the children of the poor most directly. Many of these children receive federal assistance. Thus, in the Phase II sample 78 percent of the centers chosen enroll at least some children receiving federal assistance. However, the effects of federal policy are quite pervasive, and no national study of day care would be complete without the inclusion of children of varying economic backgrounds. Therefore a number of centers were also selected in which all of the day care costs are paid by the parents of the children enrolled.

Non-Random Selection of the Sample

Frequently in empirical research of this kind a sample is chosen by random selection. Probability theory may then be used to generalize the results obtained to the universe from which the sample was drawn. However, in this study a random sampling would not have sufficed, for it is unlikely that a random selection of three sites and sixty-four centers could have been chosen to produce the precise properties that would be optimal for this design. The decision not to use random sampling was based on two principal factors – the small number of research sites and the emphasis placed by the study on testing hypotheses about the major policy variables rather than on describing a representative sample of centers.

A sample of only three sites is too small for random selection and probability theory to be useful. Estimates based on this number would be too unstable to trust. The true value of random sampling is obtained when the number of elements sampled is larger. In these larger samples the homogeneity of outcomes (small sampling variance) helps to support the case for generalization. In the case of the NDCS, even if random selection had been appropriate, little credibility could have been given the notion that a randomly-selected set of three sites would have been in some way "representative."

The second factor opposing random selection is the emphasis on hypothesis testing. Heterogeneity of the sample was needed to make tests for "child effects" feasible. It is quite possible that the "child effects" the study is seeking to measure are small. Only by careful, purposive sample selection can the experiment be designed with sufficient power to detect these effects*

A common assumption is that data based on a random sample are generalizable, while data derived from a judgmentally-selected sample are not. While this is frequently true, it is not true in this case. Because a stringent test of the hypotheses requires tests under many conditions, a very heterogeneous sample is mandatory. Such heterogeneity cannot be guaranteed by a random sample; instead it must be promoted through the selection of a precisely specified sample. If the hypotheses are supported despite all the effort to find conditions under which they may not be correct, then it will be reasonable to believe that the hypotheses are correct in general.

Implications of Non-Random Selection

Although the NDCS is not being conducted by random sampling, its findings will be significantly augmented by the results of the Supply Substudy, which *is* a random-sampling study. This study will analyze a nationally representa-

The design called for at least eight cells per site. In most cells after the screening requirements were met there were very few centers left from which to choose. In such cases, random stratified sampling is not useful.

tive sample of 3,000 day care centers with a child capacity of 13 and more. Every state in the nation will be represented with an average sample size of approximately 60 centers per state. With this large sample size, accurate statistical inferences can be drawn about the overall universe of centers. In fact, a sufficient number of centers will be sampled nationwide to permit inferences about major sub-groups of all centers. Inferences can be made, for example, by auspices of center, by size of center, by region of the country, by small-city centers versus large-city centers, and by number of federally-supported children.

The Supply Substudy will facilitate a comparative analysis of the 64 study centers. This analysis will define precisely the extent to which the study includes representatives of all the major kinds of centers, taking into account demographic factors. What is ultimately of interest is whether the differences between the study centers and centers in general could perhaps lead to incorrect inferences.

Consider an area in which it is clear that the NDCS center sample does not match the national day care distribution. Centers were chosen for the study only if they had a licensed capacity of at least 25 children. In reality, approximately half of all licensed centers are smaller than this and thus fall outside the study universe. It must be emphasized that any inferences outside the range of this universe must perforce be made with less confidence than inferences within that universe.

Under certain circumstances, however, reasonable inferences can be drawn about small centers. Assume, for example, that staff/child ratio has been shown in the study centers to have an impact on child outcomes. Would this effect also have been demonstrated in small centers? The analytic procedure for determining this will be to examine, within the study centers, the relationship of center size and child outcomes, given, of course, the differences in staff/child ratio. If it is found that overall center size contributes little or nothing to the measure of outcome within the range of the study centers, then it is plausible that the effect found in larger centers will be true for smaller centers also.

This inference, however, must also be buttressed by the data derived from the Supply Substudy. It is necessary to determine in what manner (other than size) smaller centers differ from larger ones. If any significant variables are identified in this way, they too must be analyzed to examine their effects on outcomes. Only if these variables have little or no effect may conclusions be drawn with any certainty.

Ambiguous situations requiring special attention may arise. For example, the study may show that center size has some effect on outcomes. Extrapolating results in this case to smaller centers can be done only with great care. Whenever such inferences are drawn, they will include a cautionary note indicating how serious the error might be. In cases in which the errors are likely to be too large, no inference will be drawn.

Site and Center Selection Bias

Additional characteristics of the experimental design will also have an effect on the nature of the inferences that can be drawn. Because a minimum of 16 centers was required from each site, it was necessary to select larger urban areas with enough different kinds of centers to fit design criteria and allow for the possibility that not all centers selected would agree to participate. In fact, some did refuse. Because of these considerations, the study sites are larger than the average for all urban areas, and there is the possibility that site selection might bias the results of the study. There is also the possibility that within sites the centers that did not participate are special in some way and that different conclusions might be drawn if the study included some of these centers.

The bias introduced by the selection of larger-than-average urban areas is not likely to be significant. There is little reason to expect

that city size, per se, has much influence on the relationship between the policy variables and the effects of day care on children. City size may be correlated with factors which do influence child outcomes – demographic characteristics of families and the characteristics of day care centers' programs and staff. However, these important demographic features were used as criteria in the selection of study sites and centers within sites. The site selection was designed to find three cities which were typical along the potentially important demographic dimensions of urban areas. In addition, centers were chosen within sites to reflect a broad spectrum of center types. When data from the Supply Substudy are available in early 1977, it will be possible to determine the degree to which each important center type – whether typical of small or large cities or even rural areas – is represented in the study sample. Extrapolation of NDCS results to smaller urban areas will definitely be possible as long as it is done with care.

Fundamentally, self-selection bias is not a serious problem for the study. All of the centers selected for the study in Seattle agreed to participate. In the other two sites, there was a tendency for centers with a certain constellation of characteristics to decline. In Atlanta, for example, these were private for-profit centers with low staff/child ratios and low professionalism. There are many such centers in the day care world, and leaving them out of the study would have been a serious mistake; therefore, alternate centers of this type were included. The final selection of study sites had the appropriate distribution of center types required for an efficient test of each of the primary policy variables separately and in concert.

Attrition of Target Children

Through the careful selection of sites and centers the NDCS has attempted to create a representative sample of children in day care centers. The experimental design of both Phase II and Phase III calls for the measurement of these children twice, once in the fall and once again in the spring. For the fall measurements the target population will be intact. However, it is possible that attrition of some of these target children from the study centers between fall and spring might produce misleading findings. For example, suppose that children who do not thrive in organized day care are removed from "parent fee" centers by their parents. Thus the children remaining in those centers are those who are doing relatively well. Naive measurements would include only the remaining children and spuriously indicate that all parent fee centers contribute to child development. Comparison of these centers with publicly-funded centers with less attrition would lead to an assortment of incorrect findings.

Careful monitoring and statistical analysis will be required to detect any differential attrition. If it turns out that a bias is introduced which cannot be corrected, the study findings will be qualified to indicate this limitation.

GENERALIZATION OF NDCS FINDINGS

The three-phase structure of the study was described in Chapter 3. The objective of Phase III of the study is to identify the effects of the policy variables on the cost of day care and child development. The data collected during Phase II will be used primarily to develop the experimental design for Phase III and to refine data collection instruments. (These data will also be used to produce the policy monographs discussed in Chapter 3.) The first subsection below, *Phase II Limitations*, explains why Phase II data cannot be used to draw general inferences about the effects of the policy variables on children and costs.

An important responsibility of the NDCS will be to extrapolate the findings which emerge from Phase III to day care centers outside the three study sites. The second subsection below, *Interpretation of Findings*, gives the rationale for extrapolations when the research results at all three sites are consistent. The

methodology to be employed to extrapolate specific research results is explained in the last subsection, *Generalization Procedures*.

Phase II Limitations

Program Variables

The results of Phase II of the NDCS cannot be generalized because of the limitations of the Phase II design. It is impossible during Phase II to control for all the variables that might have policy relevance and some impact on child outcomes. Even with the short list of variables which are being controlled during Phase II, considerable effort was required to implement the design. Among the many variables that were not controlled in the site and center selection process are several that may prove to have significant child-level impacts. Variables such as center size, center auspices, director training and experience, diversity of age groupings, special services, staff turnover, staff composition, staff/child ethnic match, and educational curriculum must be studied for potential effects.

It is likely that some of the uncontrolled variables will be highly correlated with the primary policy variables during Phase II. It will therefore be very difficult to determine which of several competing factors is contributing to an observed impact. For example, the most favorable child outcomes may occur in centers with high staff/child ratios. But what if these same centers also happen to have low staff turnover? It would then be impossible within the Phase II design to determine which is the essential factor contributing to the measured effect.

Of course, if the Supply Substudy indicates that these two factors regularly occur together in other sites, it may not be necessary to separate their effects. On the other hand, if the conjunction of these two factors is merely an artifact of the NDCS sample, further research will be necessary to disentangle the results. This is one of the important reasons for having Phase III, to control factors which could not be analyzed separately in Phase II so that clearer attribution of effects may be possible.

Refinement of Phase II Data Collection

A major objective of the Phase II research is to identify inadequacies in the initial data collection instruments or procedures and to develop and implement corrections prior to Phase III. Since many of these corrections must be made while Phase II is in progress, important components of the data collected at the start and end of Phase II will not be comparable. This of course limits the generalizability of Phase II results.

All instrumentation and field procedures for Phase III will have been thoroughly tested during Phase II. This will produce a very good set of data for Phase III which will be the foundation for the major study findings.

Interpretation of Study Results

The most easily interpretable and strongest of the potential Phase III findings would be that the effects of the major study variables are essentially the same at each study site. This could mean either that no effects were detected at any site or that positive results were detected at all three sites. If this is the case and none of the potential hazards referred to above turns out to be of real concern, study findings can reasonably be generalized to the national level on the assumption that homogeneity of results is likely to carry over to other sites outside the study universe. Similarity of the policy variable results across all three study sites will be taken as evidence of this homogeneity.

For example, the study may show that the same kind of significant child impacts are associated with staff/child ratio in each of the three sites. This will create a strong argument that these impacts are inherent in the day care process and would be confirmed in most other sites. Similarly, if no impact is measured in any site, the natural conclusion is that if such impacts exist elsewhere, they are an exception.

In both cases the policy implications are clear. In the first instance, staff/child ratio can be regulated in a manner that produces the best results for reasonable cost. In the latter case, regulating staff/child ratio would serve no end within the range of staff/child ratios examined by the study.

Generalization Procedure

The last section of this chapter describes how the results of the NDCS may be generalized. This section is somewhat more technical than the preceding sections.

The inferences to be drawn will be quantitative estimates of the impact of the major policy variables. These estimates, though reasonable and justifiable, will not be accompanied by any but approximate measures of variability. Since the major study is not based on a random sample, there cannot be recourse to sampling theory in order to draw inferences; instead, variability assessments must be founded on good judgment and by analogy to the corresponding sampling situation.

Essentially, generalization of Phase III results will proceed as follows. First, an analysis must be done to find those center-level variables which are good predictors of each child measure. (If none exists, the child results should not be generalized.) For example, child measures derived from the Prescott/SRI child-focused observations (see Appendix B, page 52) could perhaps be explained using a regression equation based on staff/child ratio, director experience and per child costs, all of which are center-level variables which will be measured by the Supply Substudy.

Next, the results of the Supply Substudy will be used to group the 3,000 centers sampled in the substudy into clusters. Centers in each cluster must be similar with respect to variables measurable by the telephone survey that are found to be strong predictors of child measures. The clustering will thus produce groups of centers that are relatively homogeneous. One cluster might, for example, include only those centers which have high staff/child ratios, high director experience, and high per child costs. Another cluster might be the same as this first except that it includes only low staff/child ratio centers. Each center will fall in one, and only one, cluster. For each cluster, an estimate of the total number of centers that fall into this cluster nationally will be obtained.

Next, each of the Phase III study centers will be assigned to its appropriate cluster. If one or fewer study centers are assigned to a cluster, no generalization will be made within that cluster. Without at least two centers, there is no way of assessing the variability of the estimates. The existence of multiple study centers within a cluster will allow for a rough estimate of variation. In those clusters in which the estimated variability is too large, no inferences will be drawn. This is another way of trying to guarantee some homogeneity on which to base the inferences.

Within the remaining clusters, the results in the study centers will be multiplied by the appropriate weighting factors to get the national estimates. These estimates will be presented along with estimates of variation.

Note that the above procedure implies that a different clustering may be needed for each child measure for which national averages are desired. For some measures, this analysis will be feasible. For others, the analysis will not be possible because there will not be a set of variables, measurable by the Supply Substudy, that constitute an adequate set of predictors for the measure of interest. For example, suppose that gains in Preschool Inventory (PSI) (See Appendix, B, page 52) from fall to spring cannot be explained well by any combination of center level variables. Then there will be no way in which these gain scores can be quantitatively generalized on the basis of Supply Substudy data.

The techniques just described are appropriate when it is reasonable to assume that the day

care universe is relatively homogeneous. Therefore these techniques will be used when results in the three sites are similar. However, it is possible that the results of the study will be far more ambiguous. For example, a positive impact of staff/child ratio may be found in Seattle and Atlanta but not in Detroit.

The correct inference in such a case can certainly not be that there are positive results in two out of three cities. Instead, an analysis must be done to search for the causes of the difference. This analysis can be based on a study of the centers grouped not only by site but also by census tract. Thus, each center must be characterized by the demographic characteristics of the local area in which it is found. These regional demographics will be used in conjunction with the known demographic and program characteristics of each center. The object will be to try to attribute the site difference to some combination of demographic and program characteristics. For example, the lack of an effect in Atlanta might be explained by the fact that Atlanta has an abundance of centers that are part of the public school systems. By removing these centers from the analysis, the site effect might disappear.

If a site effect can be explained in this manner, generalizations may be made which are similar in type to those described earlier. If there is not enough evidence to determine what might have led to the observed difference, further study will be needed to resolve the ambiguities.

Appendix A: SITE AND CENTER SELECTION

SELECTION CRITERIA

This appendix traces, in greater detail than Chapter 3, the development of site-center selection procedures that were used in the implementation of the Phase II "natural" experiment.

Consider first the population of day care centers that were eligible for inclusion in the study. The target population was initially defined by the Office of Child Development to include only publicly-funded centers (IV-A, WIN, Model Cities) serving children from predominantly low-income/welfare families. This definition was expanded early in the study to include private, for-profit centers. This expansion served to increase the socio-economic mix of children to be studied and also made it possible to find centers with low levels of the major policy variables. That is, publicly-funded FIDCR centers tended to have high ratio and high professionalism, whereas non-FIDCR (private) centers tended to have low ratio and low professionalism.

In order to conduct a successful study, it was necessary to set eligibility criteria for centers so that the study centers eventually selected would remain stable over the course of the study. If a large number of centers chosen for the NDCS closed during the course of study, it would seriously affect the ability to draw conclusions. To help ensure stability, it was decided that study centers should be at least one, and preferably two, years old.

In order to assess the effects of day care centers on children, they had to be in the study centers for a sufficient length of time both in hours per day and in months. It was unreasonable to expect to measure any significant effects over a short period, except perhaps in the child's initial adaptation to the day care environment. Clearly, the home environment will be such a major influence that only substantial exposure to day care is likely to be measurable. To produce an adequate pool of full-time, preschool children, centers were considered for the study only if they operated at least nine months a year, at least five days a week, and at least seven hours a day.

Instabilities in the child population are to be expected. As parents move, lose a job, change working hours, etc., their children move in and out of centers. To guarantee that, even with the expected high attrition rate, a sufficient number of target children would remain, study centers were selected only if they had 20 or more 3- and 4-year olds enrolled at the time of center selection. In the early stages of the study, the inclusion of 5-year olds was considered. It became evident, however, that because of competition from kindergarten there would not be enough 5-year olds in day care centers to draw sound conclusions.

One of the central issues of the early design decisions was whether or not there was a substantial site effect. (That is, does the same type of center, with comparable staffing and enrollment, produce significantly different results if located in one site rather than another?) In order to be able to estimate such a site effect, an adequate number of centers was needed in each site.

Furthermore, centers were to be selected in each site so that low and middle SES groups, white and black children, were all substantially represented. The resulting "overlap" in center characteristics from site to site was crucial, since similar people in different places must be examined to assess the influence of site. If it seems that significantly different laws govern the day care experiences of children in the different sites, this might be attributed to site differences and the search for the causes of these effects can begin. Without this analysis, site effects would become inextricably confounded with the other important effects to be measured.

DESIGN CONSIDERATIONS

In both the Phase II natural experiment and the Phase III controlled experiment, only a

few variables can be singled out for special attention. The greater the number so designated, the greater the number of centers needed to carry out the experiment. As discussed in Chapter 3, maximum explanatory power was achieved if each level (high and low) of one variable was associated with each level of every other. Thus, if only two variables, professionalism and staff/child ratio, are designated, four centers are needed (LP, LR), (LP, HR), (HP, LR), (HP, HR). If three variables are desired, eight centers are required for a basic design. In general, if N variables are designated as important, 2^N centers are needed for a complete design. (Of course, fractional factorial designs are possible if some of the higher-order interactions can be confounded.)

The larger the number of variables that can be controlled, the more powerful the experiment. However, analytic gains have to be weighed against reasonable limitations on resources. Initially a design consisting of 60 centers was contemplated, allowing for 20 centers in each of three sites. However, subsequent design considerations made it clear that the number of centers at each site should be divisible into blocks of 8. These block sizes are based on three, four, and five variables respectively. Of course, the larger blocks allow for the inclusion of more variables. The choice was made to use the largest block size within the limits of contract specifications and study resources. Blocks of 32 centers, based on five variables, were considered first. However, even with only one block per site, 96 centers would be needed for the three sites. This was clearly too many centers, so the five-variable design was discarded.

There remained two alternative designs, Designs I and II below, the first based on three variables and the second on four. Note that Design I consists of eight blocks of eight centers each, and Design II consists of four blocks of 16 centers each. In each design the total number of centers per site is the same. The four-variable model was preferred, subject to questions of feasibility. It was not clear that there was enough variability within the sites to allow for such a large model, which required two levels of each of four variables. To determine feasibility, an additional data-gathering process was necessary — a telephone survey of day care centers in 17 sites to determine the relative heterogeneity or homogeneity of the day care world. For example, did high staff/child ratio and high levels of professionalism invariably go together? This would be the case if it were required by state regulations or dictated by custom.

DESIGN I — Three Variables

	I	II	III	Totals
Sites: Number				3 Sites
Blocks: Number	1 2 3 4	5 6	7 8	8 Blocks
Number of Centers:	8 8 8 8	8 8	8 8	64 Center

DESIGN II — Four Variables

	I	II	III	Totals
Sites: Number				3 Sites
Blocks: Number	1 2	3	4	4 Blocks
Number of Centers:	16 16	16	16	64 Centers

In order to choose study sites that could accommodate the study design, secondary data for 50 urban areas were obtained from sources such as the census, SRS, and the licensing authorities. The object was to narrow the choice to 12-18 areas which satisfied all of the preliminary requirements.

For those sites where licensing lists were available, it was easy to compute the total number of licensed centers. For potential sites for which this information was not available, the statistical technique of multiple regression was used to predict the number of licensed centers at a given site using five easily available variables: city population; percentage of married women in the labor force; husbands present, with own children under six; percentage of population beneath the poverty level; and population density (population/city area). Using this model, the total number of licensed centers was "predicted" in cities for which more direct evidence was not available. If a

city seemed to have too few centers, it was rejected as a study site. Licensing authorities were contacted by telephone in any "borderline" city with 80 or 90 estimated centers. This process eliminated all but 14 sites.

A telephone survey questionnaire, designed to provide more detailed information about day care center programs, was administered to a 25 percent stratified random sample of centers in the 14 potential sites. Since this survey was to be used not only to screen sites but also to describe the availability of day care, three ineligible sites (Denver, Minneapolis, and San Francisco) were added to the 14 to gain a more complete description of the day care world. The main purpose of the survey, however, was to choose sites for the study.

Forty to fifty percent of all the centers were called in order to get a complete set of interviews with a 25 percent sample of the centers. The excess interviews were not, in general, non-responses. Rather, they were centers that did not pass initial screening requirements. The result was a data base containing estimates of all the basic characteristics of the day care world that were relevant for center selection.

SIX SITE SELECTION

At this stage, since both survey data and census data were available, the object was to combine these two sources to reduce the eligible population of sites to six candidates, each of which could sustain a complete experimental design, either Design I or Design II. To assure some measure of generalizability, each potential site had to represent a larger group of cities with similar social and economic characteristics.

To this end, the entire set of 29 socioeconomic variables from the *Summary U.S. Census General Social and Economic Characteristics* was used to cluster all 248 urbanized areas in the United States into a few groups. The variables included such characteristics as total population, percent foreign-born persons 5 years old and older, median school years completed for persons 25 years old and older, families with own children under 6 years old, non-worker-to-worker ratio, percent in labor force, and family's median income. The essence of the procedure was to use the variables mentioned to compute a "measure of distance" among the cities. Two cities were considered near if they shared many features in common; the fewer the features shared, the farther apart the cities. Principal component analysis was the statistical tool used to derive these distances. Using this technique, U.S. cities can be distinguished reasonably well according to three major criteria loosely described as measures of wealth, occupational status (blue collar vs. white collar), and education. In a somewhat different form, these are simply measures of SES (socioeconomic status). In particular, the analysis indicated that cities may be very much alike despite different population sizes.

The most important result was that when the urbanized areas are grouped according to SES, they are simultaneously grouped according to the regions South, North, and West.

South: S. Atlantic, E. South Central, W. South Central;
North: New England, Middle Atlantic, E. North Central;
West: W. North Central, Mountain, Pacific

This is primarily because northern cities *tend* to be industrial, blue collar; western cities are more white collar and wealthy; southern cities have less manufacturing and are poorer, but span a greater range of types. Thus, these regions are clearly distinguishable by our measure of distance. One of the few cities difficult to classify is Houston which seems to be southern or western both socioeconomically and regionally. It was classed as southern because it is slightly nearer to the southern cluster. Washington, D.C. was shown by the statistical analysis to fall outside all the clusters. Therefore, it was discarded as a possi-

ble site. (It had previously been included in the telephone survey.) The analysis merely reflected the fact that, as a capital city, Washington, D.C. differs in many characteristics from other cities in the United States. This atypicality would make it a poor choice as a study site.

Table A-1 includes, for each region, the cities that analysis recommended as potential sites (excluding Washington, D.C.). These are cities for which a telephone survey was carried out to determine characteristics of day care centers.

Table A-1 Potential Sites

South	North	West
Atlanta	Chicago	Los Angeles
Dallas	Detroit	Seattle
Houston	New York	
Jacksonville	Philadelphia	
Memphis		
Miami		
New Orleans		

Not only do these cities fall into distinct geographical clusters but they differ on day care properties also. Telephone survey data were used to compute, for each city, the level of professionalism of day care staffs, (the average number of years of education was used as a surrogate for professionalism) and the average staff/child ratio. Average results for each of the cities were plotted on the following figure Note that on the basis of day care characteristics alone cities from different regions appear to be different. Average staff/child ratio differs markedly from region to region; it is lower in the South, intermediate in the West, and higher in the North. This difference offered further support for the plan to select one city from each of these groups in which to conduct the study.

Although the averages are different from city to city, within each of these cities there exists enormous variation in the type of day care, so that it is possible to find comparable centers in each of these cities.

The next step was to use telephone survey data to reduce the pool of eligible sites to two from each region. As there were only two available sites in the West no reduction was required.

The feasibility of implementing Design I or Design II was tested for each potential site. Projections of the number of eligible centers indicated that both Memphis and Jacksonville contained too few centers to be feasible study sites.

Miami's centers have predominantly low values for staff ratio and staff education. It appeared to be very difficult to implement a full design since it was not clear that there were enough centers with high levels of these variables. New York is atypical because virtually all of its centers have high staff/child ratios and high levels of professionalism. In New York it would have been difficult to find enough lower ratio, less expensive centers for our design.

Philadelphia, dominated as it is by one sponsor, GET SET (Philadelphia school system), has insufficient variability in center types. It would have been difficult to implement a complete design there.

While there are centers of practically all types in the cities eliminated, there are too few of each type. If some of these centers ultimately declined to cooperate in the experiment, the design could not be implemented. Thus a conservative approach was taken and only those cities with many centers of each important type were considered acceptable study sites.

After the exclusions outlined above, four eligible sites still remained in the South: Atlanta, Dallas, Houston and New Orleans. These cities met all of the major screening criteria. To distinguish among them an additional criterion was used. The next most important variable

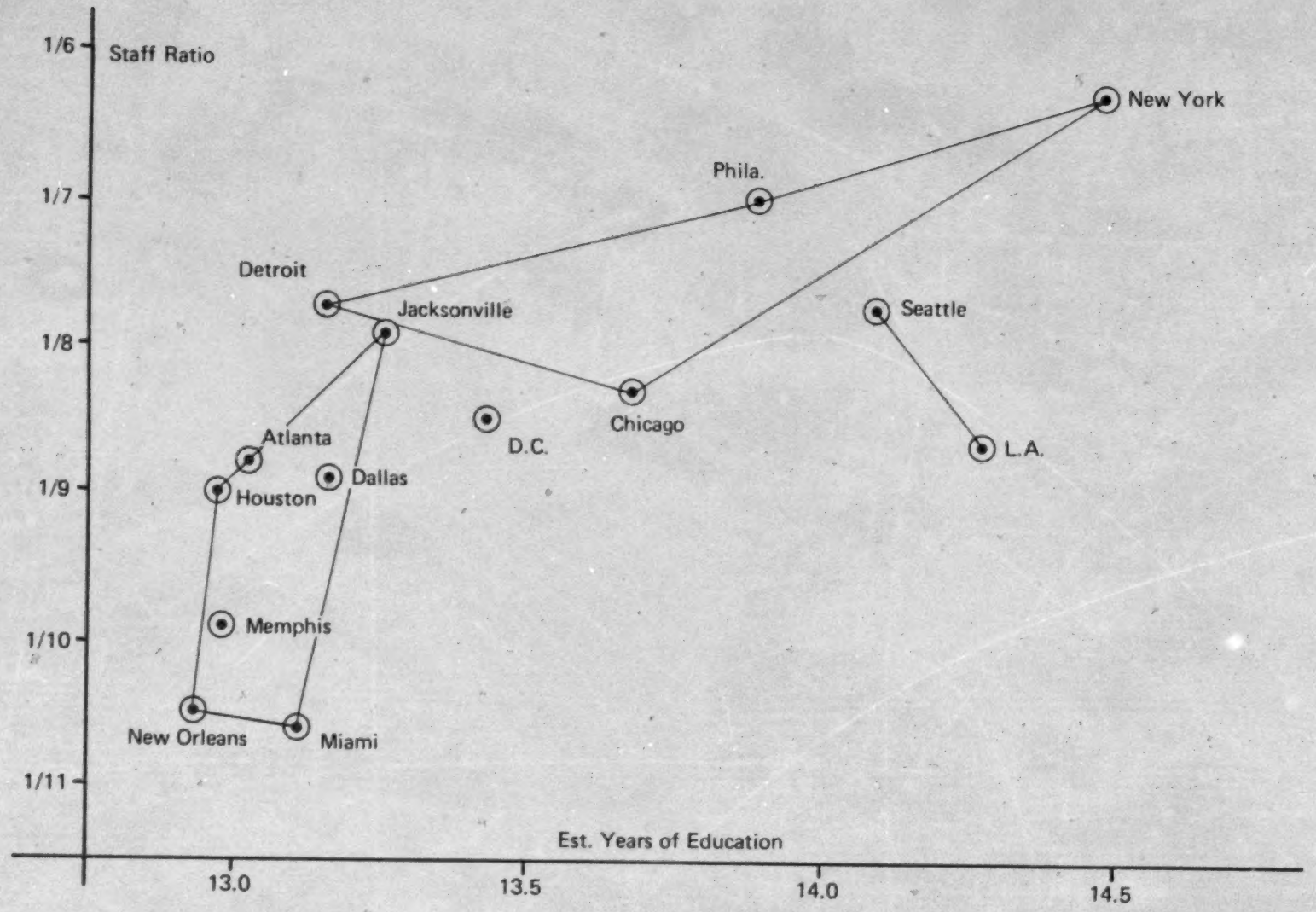


Figure A-1. DAY CARE PARAMETER AVERAGES BY SITE

was the degree of public funding. For the purposes of the study it was decided that about half the centers in the natural experiment should have public funding. In the four cities the percentages of centers with substantial public funding were as follows: Atlanta 45 percent, New Orleans 44 percent, Houston 18 percent, Dallas 20 percent. Thus only Atlanta and New Orleans have an adequate supply of available centers from which to choose the final study centers.

The six sites selected at this stage were:

South	North	West
Atlanta	Chicago	Los Angeles
New Orleans	Detroit	Seattle

The method of making these choices has been briefly summarized above. Over 700 pages of routine statistical reports and a number of specialized reports documented the decision-making process.

Of the six sites, only two, Atlanta and Chicago, were strong candidates, in terms of numbers of eligible centers, for the thirty-two center site. In the other four cities, sixteen centers seemed a more reasonable goal. Available evidence suggested that Design I was much more feasible than Design II. Design II, which required sixteen different types of centers in a block, seemed to be too difficult to achieve in the real world. Design I, on the other hand, seemed workable. It required blocks containing eight different kinds of centers and permitted control of the three most important experimental variables.

THE FINAL THREE SITE SELECTION

To reduce the number of eligible sites from six to the final three required additional information. Part of this information was obtained from a 100% telephone survey of centers in each of the six sites. (Philadelphia and Miami were also included in this new survey.) This survey was essentially an extension of the previous telephone survey. The same instruments were used; all the remaining centers in each site were contacted. The effective response rate was about 85 percent.

Concurrently an extensive field-level effort was undertaken to produce an overview of the organization of day care in each of the six potential sites. Within the six selected sites, ninety-six interviews were conducted with key individuals. Large amounts of written material, such as local evaluations and needs assessments, were collected.

This investigation had several objectives: to identify the governmental authorities, including licensing and franchising groups, that deal with day care; to list all principal sponsors of day care; to analyze day care funding mechanisms; to trace the relationships among the relevant organizations and identify key figures; to discover who would be willing actively to support the day care study for the full two years. This last issue was deemed crucial, as the stability of the entire effort rests on continuing local support. Thus, in a sense, this information-gathering effort was also a means for disseminating information. It was important that local leaders know what was intended. Also, once initial ties were established, it was hoped that these would lead to further support of the National Day Care Study.

Both telephone survey data and field-level data were used in the selection of three sites. The survey data was used first to establish preferences among the potential sites. When these preferences were not clear-cut, the more subjective field-level data was used as a final screening device, to ensure cooperation within the chosen sites.

Consider the choice between the possible candidates for the large site, Atlanta and Chicago. These were the only sites with a sufficiently large and heterogeneous day care center population. However, even in these sites Design II appeared to be infeasible. There was just not enough variability in center characteristics to permit a design which controlled for four variables. However, con-

trolling for three variables appeared to be quite realistic. Therefore, Design I was selected.

Design I required blocks of eight centers, based on the three variables staff/child ratio, professionalism, and group size. The dividing points between "high" and "low" levels of each of these variables were as follows:

Staff/child ratio	–	1/8
Professionalism	–	13.4
Group size	–	15

These values are the national medians as computed from the original telephone surveys.

On the basis of these dividing points, the day care centers in Atlanta and Chicago which passed all of the screening requirements were classified into the eight possible cells as follows:

	LP LR LG	LP LR HG	LP HR LG	LP HR HG	HP LR LG	HP LR HG	HP HR LG	HP HR HG	TOTAL
Atlanta	17	26	7	11	13	17	5	5	101
Chicago	7	8	5	14	8	8	10	25	85

To complete the design, *four* centers were required for each cell. With a cooperation rate of 80 percent it is apparent that both cities had enough centers in each cell to make the design feasible.

Additional design requisites were considered to distinguish between the sites. To guard against possible ethnic bias, the centers in each cell were to represent a mixture of races. On the following table each cell indicates the number of centers neither all white nor all black.

	LP LR LG	LP LR HG	LP HR LG	LP HR HG	HP LR LG	HP LR HG	HP HR LG	HP HR HG	TOTAL
Atlanta	17	19	9	11	7	9	5	(3)	79
Chicago	(4)	5	5	15	5	7	5	12	58

In the two circled cells it is unlikely or impossible to find enough unsegregated centers to cooperate in the study. In addition the cells with only five centers are quite suspect in that it would require almost total cooperation to make the design work. There are many more small cells in Chicago than Atlanta. A racially-integrated plan would be difficult in either site, but more difficult in Chicago.

Funding sources of centers (public or private), the number of poor in the centers and the sizes of centers were examined. On balance Atlanta appeared somewhat preferable; to make a final choice between the two sites it was necessary to make use of the field-level data. The degree of cooperation to be expected from each site was the primary concern. In almost all conversations with key individuals in Atlanta there was a very positive response, an appreciation of the importance of the study and a willingness to cooperate. Letters of intent to cooperate were received from the Superintendent of Research and Evaluation of the Public School System and from the Associate Executive Director of United Way, a major provider of publicly funded day care.

Interviews in Chicago, on the other hand, suggested that the level of cooperation would be far lower. The structure of the Chicago day care world is more complicated and, in addition, there were continuing political changes affecting day care that might ultimately influence the study, perhaps invalidating its results. In order to make the study successful it was considered essential that the day care environment remain stable over the period of the investigation. Atlanta was chosen (over Chicago) as the thirty-two center site. It has sufficient centers to allow for the implementation of the design, and cooperation is assured. By choosing Atlanta as the large site, it is of course automatically selected as the southern site. (In order to verify that Atlanta was a representative *southern* site, it was compared with New Orleans. An analysis of survey data showed that Atlanta was to be preferred on almost all counts.)

The decision not to pursue Chicago left Detroit as the only possible northern site. It was

nevertheless necessary to carry out the complete analysis in Detroit to see if it, too, might prove unsuitable. Survey data indicated that a sixteen-center design was quite feasible in Detroit. Detroit spokesmen expressed willingness to support the project. On both counts Detroit made an excellent site.

There remained only the choice of the Western site, a choice between Los Angeles and Seattle. In both cases there were problems in implementing the eight-cell design. It was necessary to adjust the dividing points between the "high" and "low" levels of the variables in order to conform to local conditions. After careful analysis of the distribution of each of the important variables, it was clear that Seattle was the better site. Los Angeles had only thirty-one eligible centers, and among these there was not a sufficient degree of heterogeneity. For example, too many of the centers had low staff/child ratios; too few had "high" group size. Racial balance was the only serious concern with Seattle: Overall it is a "white" city. Despite this, the survey revealed that, among the day care centers, there was sufficient racial integration to make possible a good study design.

An examination of the day care structure in both cities and the degree of cooperation to be expected revealed problems in Los Angeles. Los Angeles school officials made it clear that state privacy laws would make parent interviews difficult. These interviews are an important part of the analysis plan. Furthermore the level of cooperation was unclear. It was difficult to collect data from some of the day care centers because of administrative complexities. On the other hand, no such problems arose in Seattle. Indeed, the level of willingness to cooperate seemed very high. For these reasons Seattle was chosen as the western site.

CENTER SELECTION

The previous steps led to the selection of three sites for which *prima facie* evidence existed that our experimental design was feasible. The same criteria which led to the selection of the sites were used to choose the 64 centers. These are reiterated for clarity.

- Centers with larger numbers of full-time 3- and 4-year-old children are preferred. Each center must have an enrollment of at least 20 such children to ensure adequate reliability of class and center outcome averages. This is especially important since certain child-level instruments are likely to be of low reliability – perhaps as low as 50 percent. A definite requirement for numbers of children per class cannot be established until reliabilities of the instruments are known and classroom aggregation effects have been fully studied. We can ask at this time only that these numbers be as large as possible, given the constraints of other selection criteria.

- Both publicly- and privately-funded children should be adequately represented, so that the most important client group (poor children) is represented, and the most prevalent group of centers nationally is also represented. (This is accomplished by balancing privately- and publicly-funded centers in the design as much as possible.)

- Centers which have predominantly non-English-speaking children are to be excluded because of the lack of validated, culturally-unbiased instruments.

- Preference is to be given to centers which are not completely segregated, with special preference to integrated centers (30-70 percent minority), so that as many classes as possible will contain both black and white children; classroom averages will thus not be identifiable as black or white. The overall racial balance should be close to the national average in urban day care: approximately twice as many black as white families. By balancing race, SES will be unconfounded. Therefore, any analyses

on race will be unnecessary (and would be inappropriate).

- These criteria are to be satisfied as nearly as possible while adhering to Design I based on the staff/child ratio, staff professionalism, and group size.

These criteria formed the background for the center selection algorithm. Earlier steps of the center selection plan were designed to promote the study and to enlist the cooperation and probable willingness of centers to contract, while making information collection requirements so clear that centers who found them unacceptable would refuse to participate earlier rather than later. These earlier steps are as follows:

- To establish a pool of study-eligible centers, on the basis of telephone survey results.

- To notify each eligible center of its potential selection and invite each to send representatives to an introductory luncheon whose purpose is *promotional* (demonstrating support of governmental officials and community leaders for the study), *informational* and *operational* – as a first indicator of acceptability or non-acceptability of the study to individual centers.

- To carry through center visits in teams of two, with agendas as follows: verification or correction of telephone survey data; reaffirmation of each center's willingness to participate and to enter into a research agreement; to learn which persons or organizations must be consulted and which are legally responsible; more detailed examination of program and process structure, particularly as it affects the validity and appropriateness of the three basic independent measures – staff ratio, staff professionalism, and group size.

- To recalculate each important measure on the basis of visit data and special considerations specific to the site. To reclassify each center which is still willing to participate and apply the center selection algorithm to make revised selections of centers and alternatives.

Figure A-2 depicts the changing status of centers as the center selection scheme unfolded. Each symbol x indicates that response from the center made cooperation so unlikely that no further consideration was to be given to the center. Survivors of the screening process were finally assembled into a pool of cooperative centers for reapplication of the algorithm and final selection of centers for recommendation to OCD.

The following sections supply more detail on these processes, in chronological order. While the description is meant to apply to all three sites, some illustration has been provided from the Atlanta process.

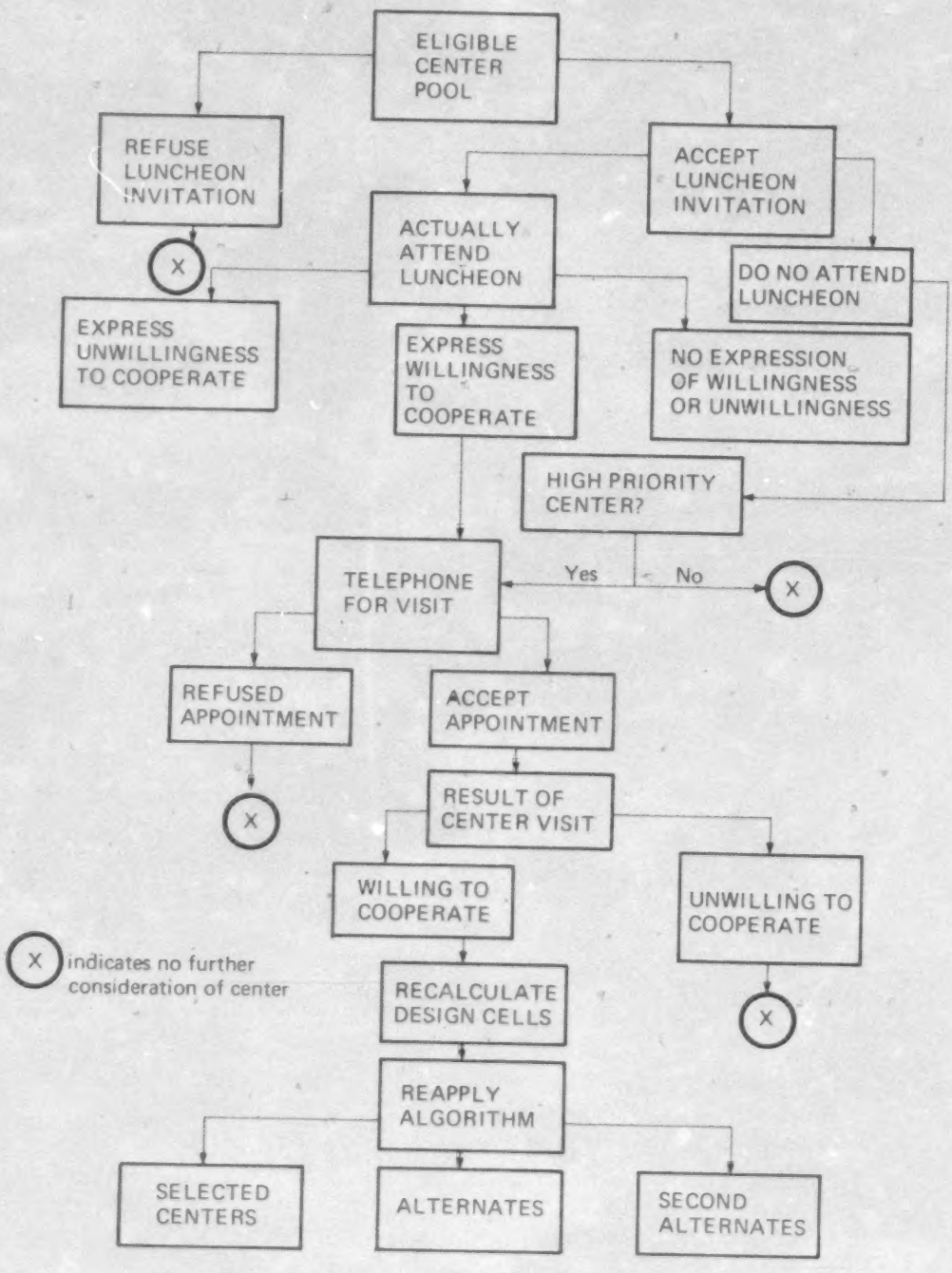
Establishment of Eligible Center Pool

The pool of eligible centers was established by excluding from consideration those centers which did not pass the initial screening criteria or which did not have at least 20 full-time three- and four-year old children enrolled. In Atlanta, a pool of 101 centers was eligible, according to telephone survey data.

Day Care Luncheon

The initial steps of the field plan focused on developing support for the study among major sponsors, community leaders, licensing authorities and other local political leaders. It was recognized that, while the support of these individuals was essential to the success of the study, their interests and concerns differed from those of center directors and other center-level staff and of individual client families. These groups had not yet been directly contacted, although some information did spread through the day care world as a result of community-level site development. Therefore, the field-level operation turned to center directors, beginning with a National Day Care Study informational luncheon for representatives of each eligible

Figure A: FLOW CHART OF CENTER SELECTION PROCESS



day care center and for government and community leaders who supported the study.

The purposes of the luncheon were as follows:

- To demonstrate the explicit support of community leaders.
- To communicate a sense of the importance and scope of the study to center directors.
- To make center directors aware of the expected degree of intrusion and changed work load, as well as of direct financial benefits to centers.
- To explain the study plan itself and to increase understanding of the research.
- Finally, to encourage center directors to express either a tentative willingness to cooperate or an early refusal.

The luncheon plan assigned equal importance to promotion of the study and dissemination of information about it, with early feedback on the reactions of center directors. Promotion of the study did not gloss over the demands that will be made upon centers or hide the fact that detailed financial data must be released, but rather concentrated upon the importance of the effort to policy-makers and to day care in general.

Center Visit Plan

The centers that indicated tentative willingness to participate in the study, together with other high priority centers which did not send representatives to the luncheon, formed a second smaller pool. Telephone survey data and the center selection algorithm were used to establish priority of centers on the basis of their desirability as part of the study design and their willingness to participate. A group of centers was selected for visits – 48 in Atlanta, to allow a final selection of 32.

The purpose of the center visit was two-fold: to elicit the support of the director and staff, while making them aware of the data collection burden to be imposed, and to verify or correct the telephone survey data. In Atlanta, there were no refusals during center visits and, in general, directors displayed an increased willingness to enter into research agreements, which indicated that the attempt to evoke early refusals at the luncheon was successful.

Using the new figures the eligible center in Atlanta that were willing to cooperate in the study were as follows:

[LP LR LG]	[LP LR HG]	[LP HR LG]	[LP HR HG]	[HP LR LG]	[HP LR HG]	[HP HR LG]	[HP HR HG]	:TOTAL
5	5	5	7	7	5	4	4	44

2

The two centers that bridge cells [HP LR HG] and [HP HR HG] could be used for either. Because more than enough centers were available for the three-variable design, centers were chosen which tended to create balance for a fourth and fifth variable. The additional variables chosen were racial balance and source of funding.

The final design included thirty-two primary centers, four to a cell, with the remaining twelve centers designated as alternates. Ten alternates were used during the cooperative research agreement negotiations.

Thirty-two centers were needed to complete the design in Atlanta; only sixteen were needed in Seattle and sixteen in Detroit. Except for this change, the procedures for center selection were the same in all three cities.

Because of inherent site differences, differences especially evident between Seattle and Detroit, it became clear that the final design could not have all of the hoped-for properties. Center characteristics displayed in Atlanta could not be precisely replicated in Seattle and Detroit. These differences were most apparent in the level of staff

education. (As a preliminary measure, staff education was used as a surrogate for professionalism.) The level of staff education was substantially higher in Seattle than in Detroit. Exact comparability became impossible. Among the recommended centers the low-education group in Seattle was roughly comparable to the high-education group in Detroit; this did not seriously affect the design plan but it makes some of the analyses more complicated. The different levels of the major variables in the different sites made necessary local rather than national medians. With these modifications, it will be possible to implement Design I almost perfectly.

This demonstrates one of the constraints upon natural experiments. They cannot be perfectly controlled. Precise levels for all of the relevant variables cannot be fixed because certain combinations do not occur naturally within the experimental universe.

In the course of the natural study year, some of the characteristics of the centers may change. Any changes may affect the design. However, the design is sufficiently strong that, even with some "drift," the statistical analyses will be adequately sensitive to the outcomes to be studied.

Appendix B: DATA COLLECTION SYSTEMS

Included in this section are descriptions of the four data collection systems which have been developed for the National Day Care Study: the *Research Program Information System* (RPIS), the *Research Cost Accounting System* (RCAS), the *Parent Interview*, and the *Site/Center Case Study*. Classroom process and child outcome measures are being implemented by the Testing Contractor (SRI).

The current battery of data collection systems is briefly described. Each description has been organized first to present an overview of the system and then to discuss instruments and implementation procedures. At the end of the section, the overall data-collection schedule is illustrated in Figure B-1, and the analytic function of each data-collection system is summarized in Figure B-2.

RESEARCH PROGRAM INFORMATION SYSTEM

Overview

The Research Program Information System (RPIS) has been designed to collect several types of data responsive to the key policy issues: staff/child ratio, staff professionalism (training and experience), group size and composition, and other center characteristics. The information system therefore includes data on basic center operations, staff and child schedules, staff background and experience, space and equipment available, scope and quantity of services provided to children, families and staff, and change of status, for both staff and children.

Instruments and Implementation Procedures

To obtain the needed data, seven sets of RPIS instruments have been designed. They are, in order of implementation:

- *Center Records and Report Inventory:* May-June 1975. Completed by the center director, the Record and Report Inventory matched each center record and report against all RPIS data requirements. The completed Inventory provided an indication of useable data already being collected and served as a guide in developing an efficient center data collection plan.
- *Space and Equipment Inventory:* July-August 1975. The Space and Equipment Inventory called for precise mapping of the center's interior and exterior design and a complete list of all major equipment. The Space and Equipment Inventory was completed by the center secretary during training in July-August. This descriptive environmental information will also be used in the Research Cost Accounting System.
- *Baseline Center Profile:* (Director and Lead Teacher Interviews): September 1975. The purpose of the Director Interview is to update center-level data collected during spring 1975 center-selection visits and to obtain more detailed and comprehensive data on staffing and group-enrollment patterns. The Lead Teacher interviews are used to document individual child schedules and the typical activity and movement patterns for target classrooms. Interviews are completed by site staff, with assistance by Cambridge staff as necessary.
- *Staff Background Questionnaire:* September 1975; update May 1976. The Background Questionnaire includes sections on personal data, special care-related experience, other job experience and educational background. Background Questionnaires are administered by the site staff to directors and by center secretaries to caregivers in target classrooms.
- *Change-of-Status Records:* Ongoing, September 1975-May 1976. These records are required to document changes in enrollment, staffing, turnover, class assignment, schedules, and major program changes. A total of seven types of change records are included and are being completed by center secretaries on a weekly or "as-occurs" basis.

- *Weekly Service Records:* Ongoing, September 1975-May 1976. Three types of Weekly Service Records are included. One documents special services provided to children and their families. The second is a log of field trips taken by target classrooms. The third is a record of staff meetings and other special staff events. All records are completed weekly by the center secretary.
- *Staff/Child Ratio Observations:* November-December 1975; February-March, April-May 1976. This instrument will be used to collect 15 randomly selected half-day observations to verify classroom ratios constructed from other data, and to further describe the staff/child ratio as it changes with group movement and activity functions across the day. Observations will be made by center secretaries.

RESEARCH COST ACCOUNTING SYSTEM

Overview

The Research Cost Accounting System (RCAS) was developed for the collection of financial information from centers participating in the study. The RCAS has been designed to satisfy three basic objectives. First, the system must generate data that can be used both to describe the financial attributes of centers and to analyze relationships between day care costs and characteristics of the centers and the services they offer. A standard set of forms with well-defined categories is used to collect data. The same accounting basis (accrual) has been defined for each center.

A second objective of the RCAS is to collect the required data while placing a minimal burden on the centers. The RCAS does this by interfacing with current record-keeping practices. In many centers, current center records are sufficient to complete RCAS forms, while others require the implementation of intermediate procedures. The forms and instructions used in the RCAS are straightforward, so that little special training is needed to complete the reporting form.

The third objective of the RCAS is to provide reliable data that may be verified both by internal checking procedures and by independent audit. The use of forms and instructions that have been extensively field-tested plus continued training and technical assistance from study personnel will insure that reliable information is obtained. In addition, validity checking and verification procedures are part of the routine data-collection procedures.

Instruments and Implementation Procedures

The RCAS comprises several different data-collection forms. They are described briefly below:

The Inventory of Accounting Practices

This is a questionnaire designed to describe the characteristics of the center's current accounting system and to identify centers in which implementation of the RCAS will require special handling. It is administered once to the financial recordkeeper in each center by research staff prior to routine Phase II data collection.

The Statement of Current Income

This contains dollar values of cash income and in-kind donations received by the center over a monthly period. The center secretary is responsible for collecting the data from center records and other RCAS forms. The form is completed by the site data coordinator from information supplied by the center secretary and the center's bookkeeper.

The Inventory of Accounts

This is recorded at the beginning and end of the accounting year so that all centers can be placed on an accrual accounting basis. Cambridge staff are responsible for its collection.

The Statement of Current Operating Expense

This reports cash and imputed expenses incurred by the center over a monthly period.

Data collection is similar to that of the Statement of Current Income.

The Record of Income and *The Record of Expense*

These records are used only in those centers where similar records are not already maintained. All cash income and expense items are recorded as a vehicle for accurately completing the Statements of Current Income and Expense by the center secretary.

The Worksheet for Donated Land, Buildings, Supplies and Equipment and *Worksheet for Donated Services*

These worksheets contain entries for contributions to the center as they occur. The forms are used to assign dollar values to these items for inclusion in the Statement of Income and Expense. Center secretaries make initial entries for all donations. The valuation of donations is done by the site data coordinator.

Depreciation Worksheets

These are used to calculate the amount of depreciation expense associated with existing assets and those assets which are acquired. These estimates are posted on the expense and income forms. These forms are initially set up by Cambridge or site staff and then maintained by center secretaries.

PARENT INTERVIEW

Overview

The Parent Interview gathers family background information and parents' attitudes toward day care. In addition, the interview serves as an initial point of contact between parents and National Day Care Study staff. As such, it is an important means of securing parent support for the study. The interview yields:

- permission from the parent for the observation and testing of the child during the study
- demographic information on children and their families
- information about how and why parents use particular day care centers and the impact they expect the centers to have upon their children and themselves

Instrumentation and Implementation Procedures

A pretest version of the interview is administered to the parents of target three- and four-year olds who are participating in the study. The interviews will take place in day care centers during the last three weeks in September 1975. A post-test version of the interview will be administered to a sample of these parents in April 1976.

SITE/CENTER STUDY

Overview

The Site/Center Study is examining site-level impacts on day care. At the center level, the history of centers, relationship to local advocacy groups, parents, social service organizations and governmental groups will be compared across the research sites. Among the important research questions to be studied are:

- What has been the history of day care at each site?
- What is the ethnic and socio-economic composition of the respective sites?
- What is the institutional and political structure at each site?
- Can differences in day care developments be related to regional, economic, and demographic composition?
- What are the day care funding mechanisms in each site?

Instruments and Implementation Procedures

Two methods of data collection will be utilized:

- Center histories taken in the spring will consist of an open-ended interview of center directors which will allow a

comparison of the development of day care at the sites and develop typologies of center development.

- The Site Coordinator will maintain a systematic survey of newspapers and other materials reflecting important economic, social and political changes that may have an impact on day care. Interviews with knowledgeable individuals at the three sites also will be conducted periodically to discuss any changes that may potentially affect day care.

CLASSROOM PROCESS AND CHILD OUTCOME MEASURES (SRI)

From a much larger battery reviewed and field-tested last summer, a battery of instruments are being tested during Phase II for their sensitivity to measurement of process and child outcomes (pre-post measures):

- **Prescott/SRI Child Focused Observation (Process)**

  The *Child Observer* system to be used is based on the work of Elizabeth Prescott of Pacific Oaks College in Pasadena, California. Observations will be conducted by trained individuals who will visit the day care classrooms and watch each participating child for about 60 minutes (three 20-minute segments, involving a *free play* period, a *teacher-directed* segment and a *meal time* are currently planned). A second round will be completed in the spring. The purpose of these observations is to record change and development in children's social skills during their day care experience. The system to be used involves comprehensive coding of all aspects of a child's activity. Four categories have been developed to summarize a child's behavior pattern: a) activity and events initiated by the child (for example, selection of an activity, stating of a preference, asking questions, giving information); b) behavior which involves an extension of an activity including other people or materials; c) child's response to another person's question, request or invitation to be part of an activity; and d) the ways a child copes with distress.

- **SRI Classroom Observation Instrument (Process)**

  The Prescott instrument outlined above concentrates on the child, whereas this instrument focuses on the caregiver. Most of the caregivers that come into contact with the focus children will be observed. This instrument was designed to assess a variety of instructional methods by observing both the general characteristics of the day care centers and the interactions between adults and children.

- In addition, each child taking part in the study will be asked (both in the fall and again in the spring) to participate in two or three short (not more than 30 minutes each) interviews with an SRI tester.

  The tests which have been selected for these sessions have been carefully screened to reflect the experiences of children in day care. They have been used many times before in similar national studies of children and are considered by many child development specialists to represent developmental characteristics of children from different ethnic and economic groups. The tests will *not* be used to evaluate individual children. Child scores will be grouped together to determine the extent to which various factors in the day care centers such as caregivers with smaller numbers of children, smaller classes and/or better professional training and experience, contribute to the growth of children.

  The tests selected to be administered are:

  The Pre-School Inventory: The Pre-School Inventory is used to find out how much general information a child has about the world around him. The child is asked to perform tasks and answer questions about familiar objects,

Figure 1

PHASE II
Overall Data Collection Schedule

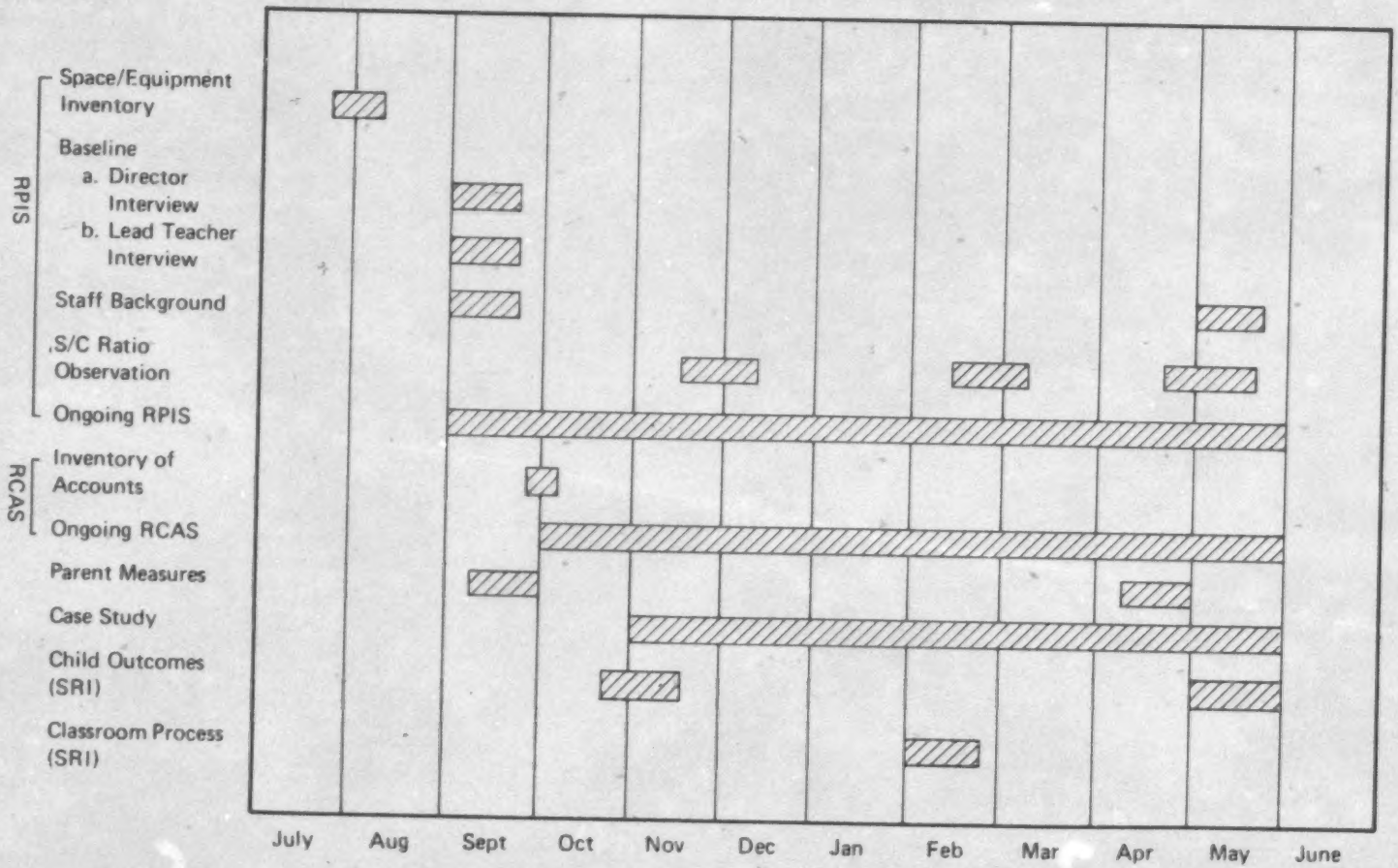
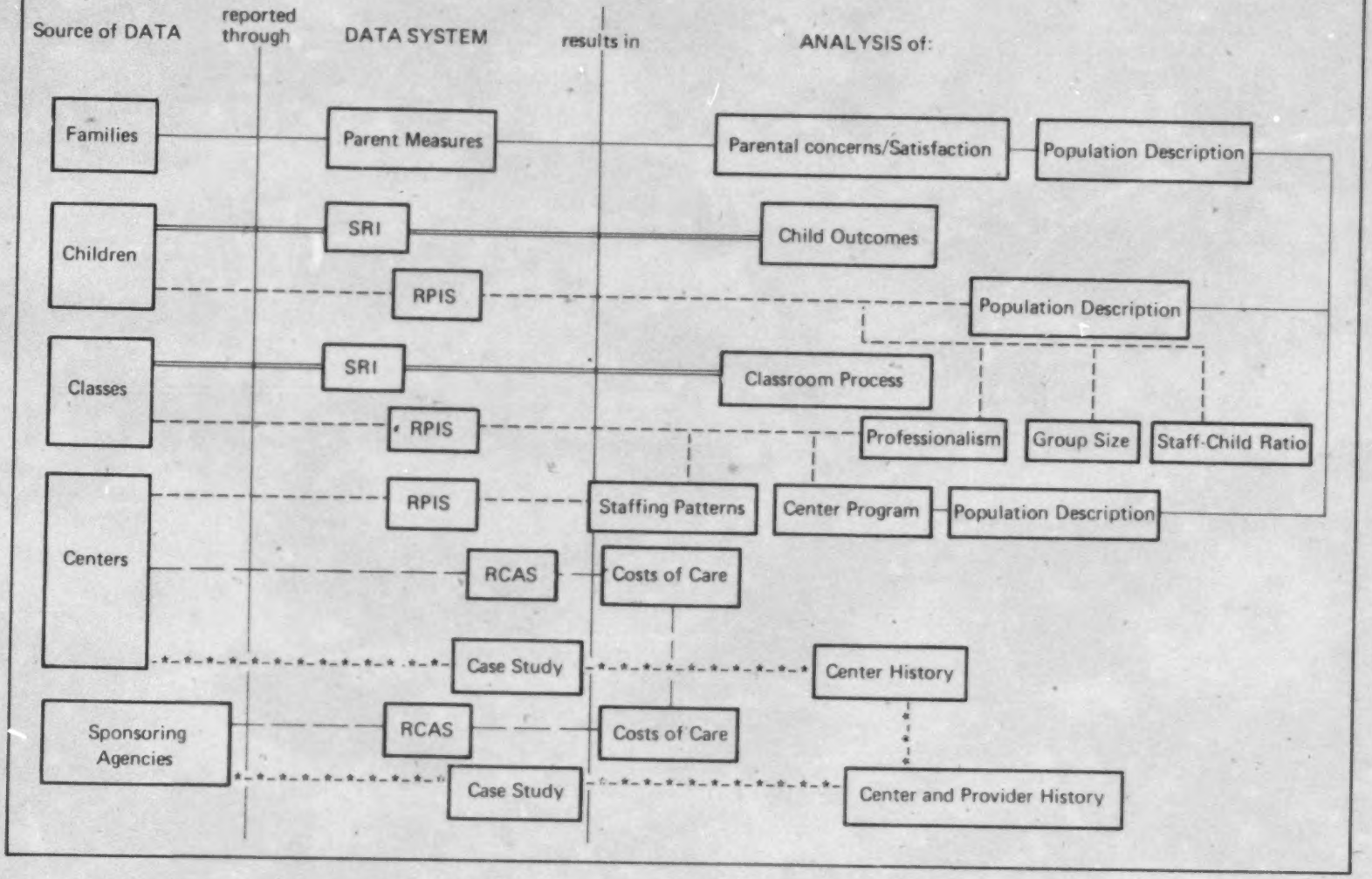


Figure 2

The Analytic Function of Each Data-Collection System



e.g., "Show me your hands," "Which is bigger, a mouse or a house?"

Matching Familiar Figures: Matching Familiar Figures is used to look at how a child goes about solving a problem. The examiner asks the child to match drawn figures on two pages of the test booklet.

McCarthy Scales of Children's Abilities-Verbal Memory: This test is designed to assess the child's recall of words spoken to him by the tester.

In addition, a sample test of several teacher ratings is contemplated for the spring of 1976. Descriptions of these instruments and results of field tests are covered in a separate report by Stanford Research Institute (SRI) available in May, 1976.

Appendix C: THE NATIONAL ADVISORY COMMITTEE, OCD STAFF AND CONSULTANTS AND NDCS STAFF

THE NATIONAL ADVISORY COMMITTEE

The members of the NDCS Advisory Group were all selected on the basis of longstanding interest and expertise in day care and early childhood programs.

Sally Brown	Executive Coordinator, Child Care Coordinating Council of Wayne County Inc., Detroit, Michigan
Virginia Burke	Director, NIH Day Care Center, Rockville, Maryland
Arthur Emlen, Ph.D.	Co-Director, Regional Research Institute in Youth Development and Delinquency Prevention – A PSU, Region X, Research Facility funded by the Social and Rehabilitation Service, Dept. of HEW
Robert Fein, Ph.D.	Psychotherapist, Evaluator, McLean Hospital Lecturer: Androgyny, Family Policy, MIT
Mary Howell, Ph.D.	Pediatrician, York Harbor, Maine
Teh-Wei Hu, Ph.D.	Professor of Economics, Pennsylvania State University
James Levine	Director, Child Study Center, Wellesley College. Ford Foundation Travel-Study Fellow
Richard Light, Ph.D.	Professor of Education, Harvard Graduate School of Education
Christine Marston	Coordinator, King County Child Care Coordinating Committee, Seattle, Washington
Keith McLellan	Assistant Director of United Torch Services of Cleveland, Ohio
Gwen Morgan	Lecturer, Lesley College: Problems and Issues in Day Care. Consultant, Texas Office of Child Development, Southeast Educational Conference
John Niemeyer	President Emeritus, Bank Street College of Education, N.Y.C. Consultant on child care
Daniel M. Ogilvie, Ph.D.	Associate Professor of Psychology and Chairman of Graduate Program, Livingstone College, Rutgers' University
Elizabeth Prescott	Director of Research, Pacific Oaks, Pasadena, California
Mary P. Rowe, Ph.D.	Special Assistant to the President and Chancellor for Women and Work, MIT. Specialist, Economics of Day Care
Richard Rowe, Ph.D.	Vice-President and Director of the Cambridge Office of AIR. President, Massachusetts Children's Lobby; Lecturer, Harvard Graduate School of Education
Nancy Travis	Director, Day Care Administrator's Training Project, Southern Regional Educational Board, Atlanta, Georgia
Harmon Walker	Director of Seattle-King County Head Start Program

OFFICE OF CHILD DEVELOPMENT

Preston Bruce, Jr., Ph.D.	Chief, Day Care Services Division, Office of Child Development, HEW
Allen Smith	Project Officer, National Day Care Study, Day Care Services Division

OFFICE OF CHILD DEVELOPMENT/CONSULTANTS

Thomas Achenbach, Ph.D.	Senior Staff Fellow, National Institutes of Mental Health, Bethesda, Maryland
Robert Brennan, Ph.D.	Senior Research Psychologist, American College Testing, Development Research Dept., Iowa City, Iowa
Victor G. Cicirelli, Ph.D.	Professor of Developmental Psychology, Purdue University, West Lafayette, Indiana

ABT STUDY STAFF

William Bache	Analyst
Chris Bornas	Secretary for Site Operations
Jana Buchholz	Study Secretary/Production Coordinator
M.G. Cline	Associate Project Director
Craig Coelen	Director/Cost Study Director/Supply Study
David Connell	Deputy Project Director
Myrtice Dye	Data Coordinator/Atlanta
Ramon Estrada	Director/RCAS
Steven Fosburg	Senior Analyst
Naomi Fujimoto	Site Coordinator/Seattle
Maich Gardner	Data Analyst/RPIS
Nancy Goodrich	Director/Information Management System
Robert Goodrich	Director of Research
Janet Grasso	Data Analyst/RCAS
Muriel Hamilton	Site Coordinator/Atlanta
Margaret Hansen	Data Coordinator/Seattle
John Harrington	Data Coordinator/Atlanta
Carolyn Hawkins	Site Coordinator/Detroit
Jean Layzer	Director/Parent Measures
Gayle Leach	Data Coordinator/Detroit
James McIntosh	Programmer
Marrit Nauta	Director of Field Operations/ Supply Study
Lynne Norton	Programmer
Richard Ruopp	Project Director
Janet Smith	Data Analyst/RPIS
Louis Steadwell	Director of Site Operations
Barbara Tannen	Study Administrative Assistant Data Analyst/Supply Study
Donna Warner	Coordinator of Data Systems Director/RPIS

NOTES TO THE CHAPTERS

FOREWORD

1. These data are from the December 1975 draft version of *Report I: Presentation of the Initial Results From the National Day Care Consumer Survey,* being conducted by UNCO, Inc. for the Office of Child Development. They are taken from the Summary Table IV-7, *Hours Per Week That Children Receive Care,* p. IV-11, and are presented here with the kind permission of Dr. William Darnell, President of UNCO.

2. Two tables are presented on the following pages from which these best-estimate figures were developed. The source is the U.S. Senate Committee on Finance, *Child Care Data and Materials, October 1974,* (U.S. Government Printing Office, Washington, D.C.). Original sources are indicated as from the Department of Health, Education and Welfare. The 1967-69 figures on the tables match *Child Welfare Statistics 1967,* and 1968-69 HEW/SRS *National Center for Social Statistics CW-1* reports. The Westinghouse/Westat Survey* in the latter part of 1970 showed 17,500 centers, about halfway between the HEW 1970 and 1971 figures. Adjustments of the Westinghouse/Westat enrollment figures to approximate capacity show 700,000 children, about 40/center. This is a reasonable verification for the number of centers at the turn of the decade. However, licensed family day homes were estimated at under 9,000 by Westinghouse/Westat in 1970, while the HEW figure shows 40,700.

   A state survey report, *Day Care Licensing Policies and Practices,* issued by the Education Commission of the States (ECS) from Denver in July 1975 shows an estimated 27% more (7,400) licensed centers/group homes than the extrapolated figure from the Senate materials. Major discrepancies between 1972 HEW figures and 1973 ECS figures account for much of the difference. Given the problems in comparable state definitions and licensing practices, the fact that ECS gathered its data over the telephone, and the difficulty accepting the growth rate these figures imply, we believe that 30,000 licensed centers ±15% is a reasonable best-estimate. This would set capacity nationally at 1,200,000 using a rounded-off average of 40 slots per center. The licensed family day care figure from the ECS report is just over 80,900, virtually the same as the extrapolated HEW 1975 figure. We believe that 81,000 family day homes ±15% is a reasonable best-estimate. This sets capacity at 284,000 using a rounded-off average of 3.5 slots per home. Total licensed capacity of centers and homes would then be 1,484,000 ±15% (from 1,290,000 to 1,707,000). An early by-product of the Supply Substudy will be a new set of figures for national licensed capacity derived from actual licensing list counts for the 50 states and the District of Columbia.

   Definitions used in the tables are:

   - *Day Care Center* – a facility providing care and protection for part of the 24-hour day for a group of seven or more children from two through elementary school age. (Group homes for 7-12 children are included as day care centers.)
   - *Family Day Care Homes* – a home providing care and protection usually by only one caregiver, for part of the 24-hour day for a group of one to six children from infancy through elementary school age.

3. There are several sources used to derive these estimates. Table IV-32 from the 12/75 UNCO report (op.cit.) shows 950,000 day care center children distributed by age group. Westinghouse/Westat also has partly comparable data from 1970. Finally, the most recent detailed analyses

*Day Care Survey 1970: Summary Report and Basic Analysis, April 1971, *Westinghouse Learning Corporation, and Westat Research Incorporated, pp. vi-vii.*

TABLE 1

NUMBER AND CAPACITY OF LICENSED CENTERS AND FAMILY DAY CARE HOMES 1967-72, EXTRAPOLATED 1973-75

DAY CARE CENTERS

YEAR	NUMBER	% INCREASE FROM PREVIOUS YEAR	CAPACITY	% INCREASE FROM PREVIOUS YEAR	AVERAGE CAPACITY
1967	10,400		393,300		37.81
1968	11,700	12.5	437,800	11.3	37.41
1969	13,600	16.2	517,900	18.2	38.08
1970	16,700	22.7	625,800	20.8	37.47
1971	18,400	10.1	719,200	14.9	39.09
1972	20,319	10.4	805,361	11.9	39.63
1973	22,432	10.4	889,119	10.4	39.63
1974	24,765	10.4	981,587	10.4	39.63
1975	27,341	10.4	1,083,672	10.4	39.63

FAMILY DAY CARE HOMES

1967	24,300		81,900		3.37
1968	27,400	12.8	97,200	18.7	3.55
1969	32,700	19.3	120,400	23.9	3.68
1970	40,700	24.5	148,200	23.1	3.64
1971	55,400	36.1	192,500	29.9	3.47
1972	60,967	10.0	215,841	12.1	3.54
1973	67,064	10.0	237,425	10.0	3.54
1974	73,770	10.0	261,168	10.0	3.54
1975	81,147	10.0	287,284	10.0	3.54

SOURCE: U.S. Senate Committee on Finance, *Child Care Data and Materials, October 1974* (U.S. Government Printing Office, Washington, D.C., 1974), pp. 58-59.

TABLE 2

SUMMARY: LICENSED CAPACITY DAY CARE CENTERS AND HOMES 1967-72, EXTRAPOLATED 1973-75: FEDERAL IVA CHILD CARE YEARS 1970-75

YEAR	CENTER[1] CAPACITY	%	HOME[1] CAPACITY	%	TOTAL	CHILD[2] YEARS PAID BY IVA-SS	% FED CARE OF TOTAL CAPACITY
1967	393,300	82.8	81,900	17.2	475,200	n/a	n/a
1968	437,800	81.8	97,200	18.2	535,000	no data	no data
1969	517,900	81.1	120,400	18.9	638,300	no data	no data
1970	625,800	80.1	148,200	19.9	774,000	83,327	10.8
1971	719,200	78.9	192,500	21.1	911,700	128,670	14.1
1972	805,361	78.8	215,841	21.2	1,021,202	291,290	28.5
1973	889,119	78.9	237,425	21.1	1,126,544	456,680	40.5
1974	981,586	78.9	261,168	21.1	1,242,754	525,786	42.3
1975	1,083,672	78.9	287,284	21.1	1,370,956	552,151[3]	40.3

SOURCE: U.S. Senate Committee on Finance, *Child Care Data and Materials, October 1974* (U.S. Government Printing Office, Washington, D.C., 1974)

1. pp. 58-59
2. pp. 78-79
3. p. 71

of UNCO's data base exclude the double counting of multiple uses. Displaying the data in tabular form shows the following:

	Under 3	3 to 6	6 and Over
Westinghouse/ Westat	12%	77%	11%
UNCO 12/75	15%	54%	31%
UNCO 1/76	17%	67%	16%

The last set of figures has been used for the age-distribution estimates.

4. *Child Care Data and Materials, 1974*, p. 71, the sum of 1975 IV-A employment and nonemployment-related estimated 1975 federal obligations and child care years.

5. Ibid., p. 78-79.

6. *Federal Research on Day Care in Recent Years:* The data base currently available on day care in the United States has some serious limitations. One recent article summarized the situation as follows:

> The information most frequently cited today on how employed mothers arrange for the care of their children is either several years old and possibly obsolete or too limited in scope. The

last comprehensive nationwide study on child care arrangements, published in 1968, covered mothers who worked in 1964. Subsequent studies, few in number, vary in quality and have severe limitations. They survey, for example, women in low-income groups, in certain geographic area, in a specific organization or institution and on welfare rolls . . . The continuing rise in the number of young children whose mothers are in the labor force is a strong argument for obtaining up-to-date, reliable information on the kind of care these children receive.*

In the last decade there has been one major study of demand – what arrangements parents use, and one major study of supply – what types of provider arrangements are available. There *has been no major national study of the impact of day care on the lives of young children.* In fact, there has been no major study of preschool children in any setting that was rigorously designed, and that included measures of input, process and outcome with appropriate analyses.** Most studies of outcome have looked for program effects, that is the effect of curriculum and/or program philosophy. They have been local and small-scale, intensive, treatment-oriented projects, and the accompanying evaluations have generally been designed accordingly.

The fact that the Secretary of Health, Education and Welfare must provide Congress with information relevant to the appropriateness of the Title XX child care standards in 1977 magnifies the need for developing a more adequate data base at this time.

One of the earliest and most comprehensive national empirical studies of U.S. child care arrangements is the 1968 Spindler-Low study.*** Data were obtained from supplementary questions inserted in the February 1965 Current Population Survey of the Bureau of the Census. Responses were obtained only in those households in which there was a mother who worked at least part time for 27 weeks or more during 1964 and who had at least one child under 14 years of age in her home. The study provides important information on the characteristics of this particular group of child care users; it indicates, for example, the degree to which child care is predominantly an in-home phenomenon. By now, the data are 10 years old and of questionable applicability. The cost data provided by Spindler-Low, for example, cannot be used to project current costs unless one has up-to-date supplementary data on the relative importance of different child care arrangements and on the rate at which child care costs have risen since 1965.

A second major national empirical study was conducted in 1970 for the Office of Economic Opportunity (OEO) by Westinghouse/Westat (c.f. note 2 above). Data were collected from a national sample of several groups of users and providers of child care services: 289 day care centers, 577 parents using those centers' services, 134 operators of family day homes; 1812 low-income households with at least one child under 10 years of age; 1277 superintendents of public school districts. The availability of data from these sources greatly increased understanding of the child care market – especially the

*Elizabeth Waldman and Robert Whitmore, "Children of Working Mothers, March 1973," **Monthly Labor Review**, May 1974, p. 57.

Marian S. Stearns, **Report on Preschool Children. The Effects of Preschool Programs on Disadvantaged Children and Their Families (Washington, D.C.: USDHEW, 1971, Publication no. (OCD) 72-27). "As Hawkridge et al. (1968) found in their search which uncovered 21 exemplary programs out of 1000, 'few, if any . . . are free from blemishes of sampling, design, testing, data recording, or interpretation.'" (p. 13).

***Seth Low and Pearl Spindler, **Child Care Arrangements of Working Mothers in the United States** (Washington, D.C.: USDHEW, 1968, Children's Bureau publication no. 461-1968.)

supply (provider) side. The small size of the sample of day care centers and family day homes, however, proves to be a major limitation of the study. The authors point out (p. 21):

> These sampling sizes are small enough that non-trivial sampling error exists . . . The sampling reliability of the estimates decline as the universe is subdivided, that is, estimates by ownership . . . are less reliable than estimates for the entire universe of centers and estimates by class size within type of ownership . . . are based on so few interviews that they should be considered only as rough guides.

State-by-state estimates of the distribution of centers or enrollment cannot be obtained from these small samples, nor can statistical analyses be used to describe the behavior of certain moderately rare but important types of centers (e.g. proprietary centers which provide some publicly paid-for care).

Another important limitation of the 1970 survey arises from the fact that it provides data for only one point in a 12 month period. Figures on the number of children enrolled and the average hours of attendance per day apply only to that one time point. To the extent that enrollment and hours of attendance fluctuate over a 12-month period – especially during the summer – the data provide an inaccurate measure of the total number of days of child care provided by centers each year. Single point estimates of staff/child ratio may also inaccurately reflect time-weighted averages over a 12-month period. Without these annual data, it is not possible to generate estimates of the additional cost and staff hours necessary to produce full-year compliance with staff/child ratios in licensing and funding regulations.

It is important to note that Westinghouse/Westat did not examine the issues of quality of care. There has been a widespread misunderstanding that the typology established by the study was in fact an empirical rating of quality. This typology – Type A = "custodial," Type B = "educational," and Type C = "developmental" or "comprehensive" – was based solely, ". . . on aims of the program and descriptive elements, without regard to whether these aims are being met, how well the elements are functioning, or what effects they have on the children and families being served . . . This typology should not be confused with levels of quality," (p. X). It is probable that heavy value connotations of the terms used for each type lead many child constituencies to the assumption that Westinghouse/Westat was a study of effects as well as program and costs.

The Abt *Study in Child Care 1970-71*, while national, was limited to 20 judgmentally selected exemplary centers. It was basically descriptive of program type, scope, and characteristics at the center level. This study made a major contribution to the understanding of center structures and to the establishment of a framework for cost analyses. In addition, the Abt study was the first to systematically measure staff/child contact hour ratios as a measure of actual services available to the child.

While not national in scope, some of the most important seminal research in day care has been carried out by Elizabeth Prescott (Research Director of Pacific Oaks College and member of the NDCS Advisory Committee). Prescott has developed important measures of quality defined in terms of the relationship of the group environment to the ability of children to thrive and the "goodness of fit" of the physical and human environment and the child. She has developed an evaluation system based on individual child observations as a means of evaluating the match between program and child. That system is being adapted for use in the

NDCS. Prescott has also done the only extensive work on analyzing the relationship of staff/child ratios to child behaviors and to different types of care settings.

It is widely assumed that the Westinghouse/Ohio evaluation of Head Start was a national study of preschool children. In fact, this study, which began in 1967, focused on the impact on children of the federally-funded Head Start program, but preschoolers were not studied. It was designed to answer the question (*Report on Preschool Children*, p. 118):

> To what extent are the children now in the first, second and third grade who attended Head Start programs different in their intellectual and social-personal behavior from comparable children who did not attend?

Not only did the Head Start evaluation actually study early elementary school students, but it concentrated on the impact of a program, Head Start, on child outcomes defined as later school achievement, basically as a means for program justification.

In the NDCS, the justification of the expenditure of funds is not related to the impact of day care on children, but rather to the policy decision to have welfare recipients become free to work or receive training. The NDCS is attempting to evaluate the impact of basic ingredients of the child's daily experience, irrespective of curriculum – ingredients which determine the human environment, the number and the nature of the contacts a child has daily with adults and peers.

The *Report on Preschool Programs* is a helpful summary of ". . . the written evidence on the effects of preschool programs on disadvantaged children and their families" (p. 1). Far more comprehensive, and in fact the most thorough state-of-the-art review of quality as developmental effects research is Sheldon H. White et al. *Federal Programs for Young Children: Review and Recommendations.* (Washington, D.C.: USDHEW, 1973, publication no. (OS) 74-101) "This study reviews existing data about child development and the evaluation data of programs for children in order to propose recommendations for federal program planning" (p. 3).

Chapter 1: FEDERAL INVOLVEMENT IN DAY CARE

1. Margaret O'Brien Steinfels, *Who's Minding the Children? The History and Politics of Day Care in America* (New York: Simon and Schuster, 1973), pp. 66-67.

2. Ibid., p. 67. (Also, Irving Lazar and Mae E. Rosenburg, "Day Care in America" in OEO's *Day Care: Resources for Decisions*, ed. Edith H. Grotberg (Washington, D.C.: reprinted by the Day Care and Child Development Council of America, no date), p. 61. Also, Virginia Kerr, "Child Care's Long American History" in *Child Care Who Cares?* ed. Pamela Roby (New York: Basic Books, Inc. 1973), p. 163.

3. Ibid., p. 69 and following.

4. *Federal Interagency Day Care Requirements*, (Washington, D.C.: U.S. Government Printing Office 938-038, reprinted 1970), p. 1.

5. "Court Blocks H.E.W. Guidelines for Funded Day Care Centers," *New York Times*, September 30, 1975, p. 3. The six-month delay, an amendment to the Social Security Act (P.L. 93-647) was tacked on to H.R. 7706, a bill to extend the duty on natural graphite, and passed just before mid-October.

Chapter 2: THE POLICY CONTEXT

1. These data are based on a 25% random survey of centers in 17 major cities conducted by the NDCS as part of its site/center selection process. The wages used for class-

room staff and the director are averages of all high and low values for all cities in the survey.

2. The example is based on the following annual enrollment and budget figures:

Total Annual Child Hours: 50 children X 9 hrs./day X 50 weeks = 112,500 hours/year.

Required Annual Staff Hours at Different Ratios:

at 1:6	112,500/6	= 18,750
at 1:8	112,500/8	= 14,063
at 1:10	112,500/10	= 11,250

Maximum Annual Income: 50 children X $33/week X 50 weeks = $82,500

Annual Budget:

	1:6 Ratio	1:8 Ratio	1:10 Ratio
Personnel (74%)			
Director	$ 7,000	$10,000	$12,000
Classroom Staff (Hours X $)	48,188 (18,750X$2.57)	45,188 (14,063X$3.21)	42,188 (11,250X$3.75)
Part-time Cook	1,260	1,260	1,260
Fringes at 8%	4,516	4,516	4,436
	$60,964	$60,964	$59,884
Nonpersonnel (26%)			
Space and Util.	$10,000		
Food ($.75/child/day)	9,375		
Maintenance	360		
Office Supplies	240	(same)	(same)
Equipment	361		
Ed. Materials	1,000		
Travel	200		
	$21,536	$21,536	$21,536
Total Budget	$82,500	$82,500	$81,420

3. An average weekly fee of $22.50 would reduce annual income to $56,250. This $26,250 drop in revenue would have to be absorbed in the classroom staff category (and corresponding fringe benefits). At $2.57/hr. there would be enough money for 9293 classroom staff hours annually. The ratio would be 9293/112,250 or 1:12.1.

4. Cf. FOREWORD note 2 above. There are no direct figures available on the subject

of proportion of federally-subsidized center care to family home care.

5. These estimates are based on extrapolations from the NDCS 12/74 - 1/75 telephone survey data base. The figure for centers of 25 or more capacity for the 50 largest U.S. cities was conservatively derived at 3,000 or 50 centers per city. This would yield a 12,000 center figure based on the Westinghouse/Westat 1971 distribution of centers-by-size (Table 2.13 on p. 41 shows about 8900 or 51% of centers under 25 and 49% over). 12,000 is 40% of 30,000.

6. Westinghouse/Westat Table 2.13 on p. 41, when adjusted for ranges and capacity shows the following distribution:

Full day Enrollment	Average Enrollment	Est. Total Centers	Est. Total Enrollment
7 - 12	9.5	3,439	32,671
13 - 24	18.5	5,499	101,732
			134,403
25 - 44	34.5	4,890	168,705
45 - 59	52.0	2,006	104,312
60 - 99	79.5	1,296	103,032
100+	125.0	417	52,125
			428,174

7 - 24	134,403 or	24%
25+	428,174 or	76%
	562,577	100%

7. Cf. FOREWORD note 3 above.

8. Westinghouse/Westat p. 30 shows 24.5% of full day enrollment as aged four; UNCO in Table IV-20 shows 23.9%.

9. Westinghouse/Westat p. 31, shows 8.2% of total full day enrollment for combined Spanish-American and Other categories. UNCO Table IV-21 shows 9.5% for the same two categories.

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